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ABSTRACT

Fifty-five vocational educators participated in the 18th Annual Southern Research Conference in Agricultural Education at Louisiana State University. Presentations included in the document are: (1) "The Research Problem in Agricultural Education" by L. L. Pesson, (2) views on organizing a vocational agricultural education department for effective research by C. L. Mondart, James F. Shill, and Earl T. Carpenter, (3) "The Function of the R.C.U.--Relationship to Teacher Education Institutions, State Departments of Education and Local School Systems" by W. W. Stevenson, (5) "Research Strategies for the Seventies" by J. K. Coster and J. K. Dane, (6) "A Research Report--Texas" by Earl Webb, (7) "The Center for Research and Leadership Development for Vocational and Technical Education" by Roy Butler, (8) "The Construction of Standardized Achievement Tests for Off-Farm Agricultural Occupations" by J. Alex Hash, (9) "The Influence of Selected Family and School Related Factors on the Educational and Occupational Levels of High School Boys and Girls" by C. M. Curtis, (10) "Working with Local Systems in Implementing Research" by William C. Boykin, and (11) "Arkansas Vocational Education Evaluation Project" by Robert E. Norton. (GB)

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SOUTHERN RESEARCH CONFERENCE IN AGRICULTURAL EDUCATION

JULY 30, 31, AUGUST 1, 1969

LOUISIANA STATE UNIVERSITY
BATON ROUGE CAMPUS

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DISSEMINATION AND IMPLEMENTATION OF RESEARCH FINDINGS

Proceedings of the Eighteenth Annual
Southern Research Conference
in Agricultural Education

July 30, 31, and August 1, 1969
Louisiana State University
Baton Rouge, Louisiana

Charlie M. Curtis, Editor

Conducted by
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in association with
State Department of Education

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SOUTHERN RESEARCH CONFERENCE IN VOCATIONAL EDUCATION

Wednesday, July 30, 1969

A.M.		
8:00 - 9:00	Registration:	LSU Union, Castillian Room
	Presiding:	C. L. Mondart, Sr., Director School of Vocational Education Louisiana State University
9:00	Welcome:	J. Norman Efferson, Vice Chancellor and Dean College of Agriculture, Louisiana State University
9:15	Welcome:	Thomas S. Derveloy, Assistant Superintendent for Vocational Education, Louisiana State Department of Education.
9:30	Address:	Rodney Cline, Professor of Education, Louisiana State University
10:15	Coffee	
10:45	The Research Problem:	Lynn Pesson, Coordinator of International Programs and Head of Extension Education Department, Louisiana State University.
12:00 NOON	Lunch	
P.M.		
	Presiding:	T. S. Colvin, State Director, Vocational Agricultural Education, Louisiana State Department of Education
1:30	An Activity Analysis:	A Research Related Approach to Program Development. Richard Baker, Director Occupational Coordinating Unit, Auburn University
2:15	Organizing a Vocational Agricultural Education Department	for Effective Research. Panel Discussion. C. L. Mondart, Louisiana State University James F. Shill, Mississippi State University Earl T. Carpenter, Clemson University
3:00	Discussion	
3:15	Coffee	

Wednesday, July 30, 1969

P.M.

3:45 The Function of the RCU--Relationship to Teacher Education Institutions, State Departments of Education and Local School Systems. William Stevenson, Director, RCU Oklahoma State University

4:30 Discussion

Thursday, July 31, 1969

A.M. Presiding: J. C. Atherton, Professor, Vocational Agricultural Education, Louisiana State University.

8:45 Review of Related Literature--ERIC System. Roy Butler, Clearinghouse Staff, The Center for Research and Leadership Development in Vocational and Technical Education.

9:30 Discussion

9:45 Coffee

10:15 Research Strategies for the Seventies. Prepared by John K. Coster, Director and Professor of Agricultural Education, North Carolina State University and J. K. Dane, Research Assistant, Center for Occupational Education. Presented by: William Brown, Assistant Director, Research Coordinating Unit, North Carolina State University

11:00 A Research Report--Texas. Earl Webb, Professor, Vocational Agricultural Education, Texas A & M University.

11:30 Lunch

P.M. Presiding: Paul Brown, Director, Research Coordinating Unit, Louisiana State Department of Education

1:30 A Research Report--Arkansas. Robert E. Norton, Assistant Professor, Vocational Education, University of Arkansas

Thursday, July 31, 1969

P.M.	
2:00	A Research Report -- South Carolina. J. Alex Hash, Professor Agricultural Education, Clemson University
2:30	A Research Report -- Louisiana. Charlie M. Curtis, Professor Vocational Agricultural Education, Louisiana State University.
3:00	Discussion
3:30	Coffee
4:00	Business Meeting: Richard Baker--Presiding Occupational Research Coordinating Unit Auburn University
7:00	Banquet

Friday, August 1, 1969

A.M.	Presiding: Charlie M. Curtis, Professor Vocational Agricultural Education Louisiana State University
9:00	Adapting Research to Local Participation. Woodrow DeFelice, Superintendent of Schools, LaFourche Parish. Vocational Agriculture Teachers: Robert Arceneaux, Harvey Robichaux, and Richard Weber
9:45	Working with Local Systems in Implementation of Research William C. Boykin, Head Agricultural Education Department, Alcorn A & M College.
10:15	Coffee
10:45	Buzz Session
11:45	Summary and Overview of Conference. C. L. Mondart, Sr., Director, School of Vocational Education Louisiana State University
12:00 NOON	Adjourn

KEYNOTE ADDRESS

by

Dr. Rodney Cline
Louisiana State University

I'm interested in your pronunciation of the first word which appears on your handbook. We've had a little debate in our faculty councils about whether you should say re'-search or research' and in our department of graduate education, frankly we prefer the pronunciation research', yet we know that for a lot of our people the word re'search is more appropriate. You know the graduate student who has had reason to check on something and hunted around the library until he found it, then for some reason or reasons, time passes and he hasn't thought about it anymore, then he approaches the time of examination or something, thinks he'd better look that up again and he has to go back and "re'search" and all he can remember is that it was a green book or a red book somewhere back in the stacks. Certainly, I think that you people are better aquainted with, and more involved with, this matter of research than any group I've had the privilege of being with. You are living testimony of the value and significance of research. As both Dr. Mondart, and Mr. Derveloy were saying, something about in Louisiana we think we have some things to be proud of; Louisiana ought to be the center of interest in a lot of things agricultural, including agricultural research. It was one who was to become a citizen of Louisiana, the late Seman A. Knapp, who I think more than anybody else was a leader in the enactment of the Hatch Act of 1887 by which the experiment stations came into being. I think it was he, who after he became a citizen of Louisiana did more than anybody else to establish the work, out of which has come the entire movement of agricultural extension. You folks in agriculture have not only gone forward, yourselves in many ways, but have I think represented that which has been a challenge to those of us in a great many other fields.

I think it was in the Spring of 1930, then a principal of a small north Louisiana high school, that I was traveling down through the country that we sometimes in Louisiana call the "sugar bowl." Somewhere around Patterson or Franklin, some of those places down there, I found myself admiring the wonderfully mature stands of sugar cane; 8 to 9 ft. tall, thick as it could stick, great big stalks, mile after mile, when suddenly through my jug-headed consciousness there occurred the realization that the sugar cane had no business being there. This was in the spring. It should have been harvested the previous fall; it hadn't been; and I asked a question or two and found out that the Mosaic disease had put Louisiana's sugar industry on the blink. We were out of the sugar business; except for the fact of agricultural research by means of which varieties were found that were resistant whereby Louisiana got back into the sugar business.

I grew up in Southwest Louisiana rice area. I never lived on a rice farm tho I worked on one for a time and I remember it quite well in the days before most of you were born. If we could scramble around and produce about 10 barrels of rice to the acre, we were pretty proud of ourselves. And at the given time we would get out there and cut that rice by hand, shock it, then after a while if it had dried enough we'd get the thrashing machine out there to thrash it and we were in the rice business. Except I remember one year that the rice never did get thrashed, because it never did get dried out in the shocks. Things went on the blink. We thought it was pretty good if we got half a bale of cotton to the acre, in lots of parts of Louisiana; or 15 bushels of corn.

I have thrilled over and over as the years have passed, having gotten away from the agricultural activities first hand, to note the changes that any good citizen ought to be able to note in the landscape of Louisiana and I'm sure of similar things to be found in other agricultural states. One of the big things we did in boyhood was to go and drape ourselves over the rail of the cattle dipping vat, where the scrawny, tick infested cows were brought to be dipped in order that we could be in the cattle business. As contrasted to the wonderful view that we now have as we drive around over the state to see the fine herds of blooded livestock, bringing, I'm sure, uncounted millions of dollars to the economy of the state over a period of years. Tomatoes, potatoes, corn, peaches, watermelons, poultry, livestock, fertilization, disease control, better means of cultivation and harvesting; you folks have done these things for our state, and other states, and for the economy of our people, and again I think it is not as adequately realized as it deserves to be. Not only have uncounted millions of dollars been added to the economy of the agricultural states as a result, but the mode of rural living has had added wholesomeness as well as prosperity. And this will continue. That's one of the things you're here to be concerned about: the continuance, the stepping up, and the improvement of agricultural research, which is always the life's blood of any enterprise to which man puts his hand. And as you already know to an extent, and you've been told to an extent, we have magnificant machinery for this: the research laboratories, the experiment stations, the teaching at the universities, the teaching and the demonstrations through the vocational agriculture teachers, the county agents, the home demonstration agents, the youth work, and boys' and girls' clubs. I might revert one more time to the late Seman A. Knapp, whose thinking and whose work did so much to lay the foundation for those things, how he said, "if you know something that's an improvement and go to a man and tell him about it, he might doubt you. If you take him to a place and show him how it's working, he might still doubt you; but if you can get him to try it himself, put it into operation on his own place and it works, he can't doubt you." That's the basis of the work of our agricultural agents.

Our research in agriculture and in other fields, up till now, has magnificently functioned to the improvement of production and this is necessary in order that our people might be fed and clothed and in order that the producers might be helped to make a decent living. I congratulate you on these things, but I express my indebtedness to you about these things along with the reiteration of my conviction that these things must and shall continue. Yet I ask your indulgence for sounding a somewhat different note this morning in my few minutes of allotted time. It seems to me that not only do we have to think, in addition to production, about distribution and consumption (and this whole business, as you know, in which 92 per cent of Americans depend on the other 8 per cent for food and fiber) but more particularly with this sort of thing, the 92 per cent are increasingly ensnarled in the artificialities of urban life with resultant social evils of all descriptions. You in agriculture have displayed great genius in using research procedures to increase production and improve the matters of distribution and consumption, to improve the quality of what is produced, and again and again you have continued to do this, and should. And yet as a school teacher, as a citizen, parent and grandparent, I am increasingly minded to say that the great problems facing mankind in this space age are more metaphysical than physical, more spiritual than material, and more social than they are otherwise economic. One is reminded a little bit of the wife of an elderly womanchaser. She was asked if his antics bothered her. She said, "No, he's like my neighbors dog that's always chasing Volkswagons; he wouldn't know what to do with it if he caught one."

And I suggest to you this morning, my fellow Americans, that we're somewhat like that about several aspects of modern living and that we in agriculture cannot divest ourselves of a lively concern with what pertains to the other 92 per cent of our people. We have increasingly moved to the cities, supposing that there we could enjoy the material advantages of urban living. But we don't know how to live with each other without hatred and crime, depending on the government for handouts, and meanwhile being faced with the threat of choking to death on polluted air, and maybe being buried in our own garbage. We've developed marvels of technology, agriculture, engineering, and whatever, but we've not learned to use it for the benefit of society. We have set up systems of schools, whereby more people have more years of scholastic attainment than was ever the case before in any nation at any time in our history. Yet the understanding, the tolerance, the self-respect, the appreciation of life's finer things, which education should produce, is appallingly absent. We've shown that we can put men on the moon. Somehow or other we can't control inflation or settle a war with a 10th rate power in Southeast Asia. Obviously, all of us as researchers, teachers, as citizens, face the greatest challenge to the genius of man in that we must increasingly direct our study to the study of man himself because this, to a large extent, we have neglected. Our technology has vastly outrun our capability for its wholesome application.

We in professional education can never talk very long without referring to the name of John Dewey,at whose throne, for a variety of reasons, I have never been one to bow down. Yet, if John Dewey was right about anything, and I believe he was, he was right in urging that the method of scientific research be applied to all of man's problems. Not just agriculture; not just rocketry; not just to the making of machines but to all of man's problems. I think by this he meant, the careful study of a situation and facing the problem, realizing a challenge, setting up an reasonable hypothesis, and testing this; and in the light of the testing of the hypothesis, we draw a conclusion tentatively for the further testing of the additional situations which from day to day we have to face. Instead of just basing it on tradition or something else, we face up in what we may call a research fashion to the problems which confront us today--certainly in this case our principle research objectives are not designed to dissuade us in agriculture from the research objectives pertaining to production consumption and distribution of agricultural matters. But we're more than agriculturists; we're citizens,we're teachers. I think that the principal research objectives of our day must increasingly pertain to humanity; to human considerations socially, ethically and spiritually. These things, I warned you, present difficulties far greater, far more complex, far less tangible than those things which pertain otherwise to agriculture and technology.

It might be that we could easily find ourselves unduly pessimistic. It is one thing to breed a better variety of plant life, but another thing quite to think in terms of better people. And yet I don't share such a pessimistic view. I cannot believe that men who have made 25 barrels of rice grow where we use to think 10 was just fine, or literally to make the desert bloom like a rose; I cannot believe that men who have built computers and have obtained mastery of seas, earth and skys, are without the genius by means of which, if properly used, we can find solutions to the social problems which defy us today. Somehow or other we can find the courage and we can apply God given genius to the problems of mankind, by which if we leave them unsolved, we don't need any agricultural research. We won't need any engineering development; we won't need to send rockets to the moon because we'll destroy ourselves by the social evils of our own devising. After all, and I hope you'll agree to this, no accomplishment is worthwhile unless people are better as a result.

May I conclude simply by saying it is ours to decide.

I like to believe that the whole movement of agricultural extension, by which Southern rural living and to an extent rural living nationwide, was made better. This was so because of the long range objective of improving people; improving their manner of life, their viewpoint of life, not just that a person would have more to eat and more money in the bank. No research is justified unless in terms of dividends for improved humanity.

Thus may I suggest our needs for the future. Not better machines, tho we hope to have these, but better people as a result of service to humanity made possible by machines intelligently used; not just more schools with more people going to the schools, but schools in which children become better men and better women, led by teachers who have a lofty concept of what the child is and what the child may become. As a teacher of philosophy I love to quote something that comes to us from the pen of Herman Harold Horn about the child. Taking into account that in certain kinds of societies the child is viewed as a means to an end, as something to be used for a service to the state, a monolithic government insisting that his training, his educational upbringing be of a sort that he can fit in as a cog in the wheel to what leaders of state will demand. In reaction to this we hear Herman Harold Horn speaking of a child as one "whose origin is diety, whose nature is freedom and whose destiny is immortality." When we think of a child like this, a child to be set in the midst, a starting point, and the center of all of our interest, agricultural research or what have you, what is going to happen to the child? What is going to be the truth of the generation of which he will be an adult member? These things represent in our research interest, broadly and continually, a challenge to every one of us who is a teacher, who is a citizen, and a worker in the affairs of our society.

Your chairman was kind enough to refer to this speaker as being to some extent interested in history, and I have, for a good many years, loved to delve into history. I think this started when my father, when I was still a small boy, brought home a nine volume set of a History of the World, richly illustrated; and before I had advanced in school far enough to be able to read that, or to understand very much of it, I loved to take those volumes down one at a time and turn through the pages and see the pictures of the heroes of the old times, etc. Well, that's interesting to some of us, the history of the past, ancient history, medieval history, early modern history, but I guess it is because I'm getting old, not very much more time left, that I'm increasingly concerned about history as it's going to be written, 20 years hence, 25 years hence, early in the 21st century, the historian of the future. And I'm confident that unless the bombs fall and wipe everything out that historians will be concerned about America in the latter third of the 20th century and will be writing a characterization of what we did and what we were. No one can validly and adequately predict what these historians will say, but I suggest that there are two major alternatives as concern the major themes which they will probably reflect in their writings. One is this, that they will say of us, that during the latter part of the 20th century men generally and particularly those in America, developed marvelous technologys but fell into self destructive savagery because of failure to match technology with social and ethical problems. I don't believe that's what they're going to write, because I'm not a pessimist, but I cannot discard the reality of the possibility by means of which they may be forced to write a thing like that. The other thing the historian will write of our day, "Man achieved great things in the material realm by development of scientific genius, but along with this his greater achievement was in the realm of humanity itself as he learned slowly, painfully, but by dent of great devotion to apply his best research efforts and his best talents to the relief of the social ills that threatened to destroy his civilization." And I would say to you this morning, fellow teachers and fellow researchers, that the answer to this question is our answer. Which will it be? Which sort of theme will be that which governs the writing by the future historians of the history of our day? Much of this answer rests with the people whom we call people of research. Students, teachers, workers, our choice of objectives and our faithful pursuit of the important ones.

THE RESEARCH PROBLEM IN AGRICULTURAL EDUCATION

L. L. Pesson

Agricultural Education, like many other facets of the "establishment," is facing a serious challenge brought on by the massive changes affecting society in general and us in particular. The changes that have been occurring and undoubtedly which will continue to occur present for us many dilemmas and paradoxes. On the one hand, there has been a tremendous shift toward an urbanized and computerized society, with a concomitant increase in the numbers of unemployables who are not fitted to take a gainful and useful place in society. On the other hand, the rapid shrinkage in the numbers of people who are employed in basic agriculture, farming, coupled with the tremendous technological explosion, present us with a diminishing audience which requires high levels of knowledge and understanding in order to function effectively in their chosen profession. Agricultural education, therefore, is faced with a dual challenge; preparing a small number of present and prospective farmers to face the technological and managerial requirements of a highly complex profession and a large number of people to fit into the agri-business complex at varying levels of skill and knowledge requirements.

All of us, consequently, are faced with the complex problem of designing meaningful research projects which will serve and answer some of the fundamental questions that face us as outlined in the preceding paragraph. In this presentation this morning, I am presenting, hopefully, a conceptual framework that can be useful to all of us in thinking objectively about these problems. This framework will be presented in two parts, some concepts for defining meaningful research problems and some concepts for developing useful empirical research designs, followed by a third part that outlines some comments that amplify the nature of the problems.

Defining Research Problems

Education has been defined as the process whereby meaningful and desirable changes in human behavior are produced. If we accept behavioral change as the basic premise, then this presents us with a take-off point whereby we can develop a framework for looking at the definition of researchable problems. At least four fundamental questions face us immediately as follows: (1) What educational objectives should we seek to attain with our students? (2) What learning experiences are most likely to help the learners attain the educational objectives? (3) How can these learning experiences be organized most efficiently and effectively? (4) Do the learning experiences actually produce the anticipated behavioral changes within the students? In answering these questions, it may be useful for us to take a look at some fundamental concepts that apply.

Educational Objectives. The first question propounded relates specifically to the selection of educational objectives. An educational objective contains three basic parts: the learner, the content he is expected to master and the behavioral change he is expected to make in relation to the content. The decisions that lead to the selection of educational objectives are fundamental to the entire educational process, and when viewed in this perspective, the vital importance of these decisions is evident. Because of this, further explorations of some subsidiary concepts are needed.

The content area is fundamental and can be subdivided into three major areas: concepts, values and skills. By concepts we mean the basic intellectual ideas that the student will be expected to master. Some of the leading educational psychologists like Tyler and Gagne' suggest that concepts are the basic units of intellectual or cognitive behavior. When the human mind is faced with a problem, the intellectual conceptions he has in his mind are utilized to come up with the answers. To illustrate further, a farmer recently brought a sickly looking rice plant in to one of the agronomists at our Rice Experiment Station in my presence. In answering the question as to the possible causes, there were at least several conceptualizations that could be applied; insect damage, pathological damage; damage from some herbicidial applications, nutritional deficiencies or excesses, etc. These comments illustrate the nature of concepts as thinking tools; ideas that can be utilized in problem-solving, and not an assorted collection of factual data that may or may not be related.

Values refer to fundamental beliefs that the human being possesses. They are ways of looking at life, being expressed in the things that are most central to the personality organization of the individual. As an example, a group of young home economists, who were in a class of mine recently, were queried as to the nutritional quality of the breakfasts they ate that morning in order to establish a point. Eighty per cent of them rated their breakfasts as being inadequate. Consequently, all of them understood well the nutritional importance of a good breakfast, but important values interfered like being slim and sleek which is the way we males like to think of our wives and girl friends. This example emphasizes the nature of values in guiding human behavior.

Skills, of course, refer to the doing aspects of behavior; the things that a student must be able to perform. Underlying skills quite often are concepts. As an illustration, the concepts of grafting and budding involve matching the cambium layer of the scion with the cambium layer of the stock. The skill involves the process of doing the graft or the bud correctly. One can graft well, of course, without understanding the concept, but a more intelligent worker needs to comprehend what he is doing. Skills, therefore, are necessary behavioral aspects that must be considered.

In making decisions about educational objectives, information is needed. Three major sources can provide useful information as follows:

1. The professions or jobs that the learners are being trained for are one definite indicator. When we explore the job, we must think in terms of the functions, responsibilities and more critical tasks that the student will be expected to perform. What must a farmer be able to do? A worker at a horticultural nursery? A salesman for a feed and seed company? Do these have the same requirements?

2. Once the behavioral requirements of a job have been identified, the questions arise as to the disciplines which offer concepts and skills that will match the behavioral requirements of the job. If a farmer must be able to make management decisions, it is reasonable to assume that some concepts from farm management are needed to provide him with the necessary intellectual base. A seed salesman, on the other hand, may not need this kind of information, but instead may need training in public relations, speech, etc. because of the requirement for meeting the public well.

3. The learners themselves must also be considered. What capabilities and knowledge do they already possess, and how do these relate to the needed competencies? A boy who comes from a farm has a vastly different background when compared with one who comes from a ghetto. Such factors must be taken into consideration when making decisions about the concepts, values and skills to be included in the curriculum.

Learning Experiences. The second and third questions propounded in the beginning of this section on defining the research problem focus on learning and these two questions will be dealt with together. Learning, primarily, focuses on behavioral change, and our function is to make the desired changes possible through our educational programs.

In discussing this subject intelligently, the content area must be considered. If we focus on cognitive learning, for example, then we must think of behavioral change in relation to the concepts to be emphasized in the program. Bloom suggests that there are two levels of cognitive behavior; knowledge and understanding. Knowledge refers to knowing; the ability to recall the information. Rote learning is a good example. This is not to imply, however, that knowledge behaviors are simple. Being able to recall and define Einstein's theory of relativity is not simple, but moving beyond that to understanding is yet another matter.

The second level, understanding, concerns being able to think with a concept, being able to apply it in new situations, being able to extend it out from the basic idea and enlarge or ramify it, etc. It involves, consequently, the ability to conjure up the right concepts, if necessary, and to apply them in a new situation. Understanding can be sub-divided into five phases, ranging from the simplest to the most complex as follows:

> Comprehension - being able to put it in one's own words; being able to turn it over in the mind and extend it out beyond the basic knowledge of the idea.
>
> Application - being able to use the idea in a new situation; being able to apply the idea satisfactorily and correctly.
>
> Analysis - being able to break a problem down into its constituent parts, and to establish the relationship among the parts.
>
> Synthesis - being able to construct a plan; being able to take the parts and put them together into a proper relationship.
>
> Evaluation - developing a set of standards of criteria and from that determining the worthwhileness of a plan or an idea.

The behavioral change which is selected in relation to the concepts being taught is a fundamental key to the selection of learning experiences. It is one thing for a student to know something about soil fertility, but is yet another thing for a student to take a soil sample report and plan a fertilization program for his enterprise for this requires a considerable amount of understanding.

Where values are concerned as the content area, the affective behaviors must be considered. Five major behaviors from the simplest to the most complex in this domain are specified by Klausmeier as follows:

> Receiving - involves the awareness of, the willingness to, and the attention given to receiving a value from some source.
>
> Responding - is related to the acquiescence to, the willingness to, and the satisfaction derived from responding positively to a value.

Valuing - refers to the acceptance, preference for, and commitment to a value.

Organizing - is concerned with conceptualization of a value and the organization of it within a value system in the human mind.

Value Complex - a consistent value orientation is developed based on a generalized set of values and a philosophy of life.

Instructional programs, these are important. We are not only taught information, but we also have some feelings or values about it. It's like the student who made an "A" in my course, but he really didn't believe in what I taught so he didn't use it on the job. He understood the concepts well, but he did not value it highly.

The skill (psychomotor) area is also important in determining behavioral change, Four major areas are identified by Klausmeier. These are implusion-rate from a stationary position; speed-rate of movement. From these four areas come the behavioral changes related to a specific skill to be learned.

In designing learning experiences, many basic educational psychology concepts are useful. Such fundamental ideas as practice, reinforcement, satisfaction, retention, repetition, possibility for use, etc. are pertinent. As to organization of learning experiences, concepts like sequence, continuity and integration provide useful guides.

Evaluation. The fourth question propounded relates to evaluation. Evaluation implies the measurement of the degree to which educational objectives are achieved. Such concepts as types of evaluation-benchmark; intermediate, end and post-evidence of behavior change, sampling, methods and systematic evaluation procedure are useful guides in planning and conducting evaluation studies.

Some Research Problem Areas. Using the rationale developed in this section and some problems that can be derived from it, it is possible to suggest some major reseearchable areas as follows:

1. The identification of the kinds of jobs for which students could be prepared and the functions, responsibilities and critical tasks involved in these jobs is a major area of concern. Since vocational training is a primary function of agricultural education, this idea is fundamental and of first priority.

2. Studies of the learner form a second large area for research problems. We need to know much more about them, particularly with reference to the differential aspects of the backgrounds with which they come into the program. Benchmark studies are imperative so that we can have some idea of the kinds of people who come into the program and their characteristics;

intellectually, psychologically, sociologically and culturally. This makes it possible later on to do some longitudinal studies of the kinds of products which are produced, relating back to the original characteristics of the group.

3. In-depth studies of the various disciplines that can contribute potentially are needed to identify the fundamental concepts that form the structure of the disciplines, and to determine those which are most relevant to the formation of the desired behaviors within the students. This would include not only concepts from the agricultural sciences but also concepts from the social sciences that apply.

4. Although the area of values was not emphasized in the paper because of time limitations and the difficult nature of changing values, it is still a major area for attention because of the all-pervasive nature of values with respect to human behavior. An important area for research is the definition of the values basic to the field of Vocational Agricultural Education, and related to it, the degree to which these values are transmitted to and internalized by the students.

5. Some studies of behavioral change are needed from at least two perspectives. In the on-going program, first of all, assessments should be made for the degree to which the behavioral change aspects of objectives are reached. As an example, if an objective specifies analysis, can the students actually do this procedure correctly. A second, and more far-reaching area for research, is to study the degree to which the learners, after completion of the program, are able to perform effectively the behavioral requirements that have been specified for the job and for the objectives of the educational program. A very interesting aspect would be a study of the performance of graduates of the program on the job.

6. The area of learning experiences is a major one for study, offering some real opportunities for experimental type research. There are several focal areas that can be developed as follows:

    a. The use of differential learning experiences to attain the same teaching objective.

    b. The exploration of the time factor in learning, relating it to the complexity of the concept or skill.

    c. The use of integrative and problem-solving learning experiences to help students develop a conceptual map for thinking in their area of work.

    d. The sequence and continuity factors should be related to learning efficiency.

Others could also be specified, but these serve to indicate the nature of the problem.

In summarizing this section on defining research problems, a rationale has been presented, and from it some suggestions for researchable areas have been derived. This is only one way of doing it; there are others, undoubtedly. The key concept, however, relates to the development of a rationale and defining researchable problems from it. This is the challenge to all of us.

Developing Research Designs

Good research is not routine. It requires originality and creative thought. In these critical times of challenge, it is especially important to innovate and to advocate change, but change developed through painstaking empirical and applied research. As an applied discipline, basic research is not our primary function. This we can leave to the psychologists and others. Our job, therefore, focuses on being practical in the sense of making our programs more effective through the application of new and better ways of achieving optimum educational efficiency. This section of the paper, consequently, will focus on a few concepts that are considered as fundamental to research design, and which hopefully will stimulate thought processes in relation to them. Those emphasized are the ones that potentially might help us improve our research designs.

Background Information. Getting sufficient background for a problem area is highly essential so that full knowledge, if possible, of all ramifications can be obtained. We need very much to know the nature of the problem; how it arose, its importance, and what will be done with the results. Quite often, by not having full knowledge of the background for a problem, important points are missed. This reminds me of a project I conducted while on our Malaysian Contract. The first interviews with farmers were conducted by some of the students which I trained. In reviewing the data with some other interested and qualified people, the data were questioned because several people more knowledgeable than I about the local culture indicated that the local peasant had a decided tendency to tell you what they thought you wanted to hear. The data, therefore, had questionable validity in their minds.

One of the fundamental means of acquiring background information is to search the literature. I often find my students looking at the same old general stuff that everyone else has looked at, and in the same old way. It's very important to make a thorough search, even to the extent of looking at other social science disciplines, combing abstracts, journals, etc. After all, each of the social sciences studies the behavior of man, although from a different disciplinary rationale and perspective. This difference can be very rewarding in presenting new viewpoints. As an illustration, for the first part of this paper, the material was inspired primarily by educational psychology literature that was considered pertinent to the problem at hand.

Theoretical Framework. Every research project should be based on a body of theory. A theory, of course, represents an effort by a scientist to explain a phenomenon. Our fundamental theoretical area is the change of human behavior through planned, sequential learning experiences. Certain concepts and principles explain how this process occurs and how it can be facilitated. In essence, this is a theoretical framework, and each research project should be constructed upon one.

In order to emphasize this point, the following example should suffice. A Master's thesis study I recently directed focused on factors associated with the adoption of a specific recommended practice, mosaic disease control, by sugar cane farmers. Essentially, the theoretical framework involved the conception that there was a body of knowledge to be learned and put to use by a group of farmers, and that this body of knowledge involved several intellectual conceptions that must be understood before the farmer would adopt it. Furthermore, the diffusion of this information among sugar cane farmers was both a social and an educational process, and, consequently, certain concepts could be usefully employed to design a research project. Thus, we have a rationale upon which to base the study. The point being emphasized is that the researcher must have a conception of what he is to do and how the whole thing hangs together, and having to construct a theoretical framework helps him to look at all of the potential variables that may be pertinent to the problem. In the illustration used, several disciplines were involved; pathology, agronomy, educational psychology and sociology, being unified into an integrative theoretical framework for an Extension Education research problem.

Hypothesis. A hypothesis, more than anything else, is a trial idea about the nature of things. It is an estimate which is based on observation, experience and imagination. A well-constructed theoretical framework provides the researcher with a rationale from which hypotheses can be deducted easier, with precision and unity of thought. Recently, I served on the graduate committee of a doctoral candidate who had great difficulty with his hypotheses. They were at different levels of generalization, some were almost contradictory of each other, and one or two were basically irrelevant. A well constructed theoretical framework would have given him an intellectual base from which to deduct hypotheses, but this was lacking in his study.

Using again the example outlined for the concept, theoretical framework, social and educational factors were identified as influencing the adoption of the mosaic control practices. The hypotheses for this research project should center, therefore, on these two factors. Examples of the hypotheses, consequently, would include the following among others:

1. The earlier adopters use professional agriculturists as a primary source of information about mosaic control practices.

2. Understanding by farmers of the concepts involved in the mosaic control practice is associated with adoption.

Emphasizing once more the integrative and applied nature of education as a discipline, the two examples stress some of the social and psychological concepts that are applied to the educative process. Soundly conceived and well-constructed hypotheses form the bases for efficient and productive research projects that have defensible and useful research designs oriented toward answering fundamental questions that face us.

Research Methods and Techniques. Once the hypotheses have been defined, the selection of the methods and techniques to be used has an important bearing in developing a sound design. The kinds of hypotheses selected dictate to a certain extent,at least, the kinds of methods that should be used. A study of learning efficiency suggests the use of the experimental approach, while a study of factors affecting learning among farmers might best be accomplished through the use of the normative survey approach.

Among the primary methods used in agricultural education are the two mentioned above, the experimental and normative survey, and aldo the case study, the historical study, and developmental studies. Emphasis, however, has been given to the normative survey almost to the exclusion of the others. It seems to me that if we are to further advance knowledge in our field that some of the other methods ought to be used more. The experimental method, although difficult to use, offers real potential for the improvement of our knowledge of the educative process, particularly in terms of differential learning afforded through multiple and varied learning experiences. The case study approach, especially if applied on a longitudinal basis over time, offers real potential. If afreshman class entering a vocational program were observed carefully and accurate notes taken over a four-year period, much substantive information could be gained.

Considering techniques, some of the same kinds of comments are relevant. Questionnaires have been used bery extensively when interviews could have provided much more depth of information. We also have not been very good observers. One mark of a good scientist is that he constantly takes notes. Most of us unfortunately, and this includes me, tend to be action-oriented. This has been good from a program development standpoint, but because of this orientation we have not studied ourselves as well as we should have. A critical point in time, however, has been reached, making it imperative that we be introspective and analytical about our program.

Sampling. Sampling is another fundamental area that affects the quality of the research design. Good sampling requires, first of all, a precise definition of the population or universe to be studied. This must be followed by systematic procedure that ensures the selection of a sample which is representative of the total population. Too often, however, sample selection is based on expediency and we end up with data of doubtful validity and reliability, resulting in a waste of time more than anything else because the conclusions drawn represent an exercise in futility. The use of mail questionnaires, for example, to a selected sample often results in data of very doubtful validity because of a low rate of returns is often encountered. What we get most often is a sample of the kinds of people who return questionnaires rather than a sample of the total population being studied.

Encouraging students to follow systematic sampling prodedure is an important chore. One student reported to me that his sample for a term paper was composed mostly of those who came by his Extension office. We know from research on Extension Education that those who came to us for information are a special kind of people; larger farmers, better educated, users of more recommended practices, participators in activities, etc. In this instance, consequently, inferences from the data could not be drawn for farmers as a whole in his area. To do so would be very misleading.

Variables. Science rests on similar events occurring in similar circumstances. When an event is broken down into its parts, these units can be called variables in the sense that if a unit is present in a particular way, it will influence the event in a predictable way. One of the first steps to be performed in study design is to identify the nature of the variables that are thought to be involved. Of particular importance are those which are the controlling variables whose presence, absence or deviation can have decided effects. To illustrate the idea, let's take a look at some of the variables that can influence a particular learning situation. The teacher and his characteristics, the learners and their characteristics, the relationship between the teacher and the learners, the environment, both physical and cultural, in which learning takes place, the material that is to be learned, and the manner in which the material is presented are among the variables that conceivably could influence learning efficiency. All of these can be considered controlling variables because they all have a pronounced effect upon learning.

In a research situation, a variable which is being tested and controlled in its differential aspects is called the dependent variable. The dependent variable in essence is a focal point in a research project since the variation of a particular variable is measured in terms of its impact. If the time involved in learning is the dependent variable, then the various variations or increments in time would be studied to examine its influence on learning while the other variables would remain constant. The independent variables, therefore, are the ones that are held constant in the sense that they are not minipulated or tested in their differential aspects. As an example in the above situation, performance on standardized tests as an indicator of intellectual ability would be an independent variable. When the time involved in learning is varied, how do those with higher scores perform when compared with those with lower scores. A relationship could be determined conceivably between the time involved in learning and performance on standardized tests. These comments illustrate the importance of identifying and studying all of the variables involved in any problem situation.

Statistical Inference. Statistical techniques are important tools for use in research, and they should be regarded only as tools for the researcher and nothing else. Essentially, what is involved is the use of mathematical probability as an aid in determining whether or not the results obtained for a particular sample are likely to be found again. On this basis, it is possible to make inferences from data with the certainty that there is a good chance that the same findings would be evident if the study were done over. When differences are found and they are statistically significant at some level we can say with confidence that the differences are likely to be found again.

It is possible to think of variables in two ways for statistical purposes; discrete and continuous. Discrete variables are those in which things can be classified as one thing or another; e.g. high or low, yes or no, male or female, etc. Continuous variables are quantifiable and run in series, e.g. age, test scores, etc. The combinations of data possible when relating a dependent to an independent variable are threefold as follows: discrete-discrete, discrete-continuous, continuous-continuous. These basic combinations are useful to us in making decisions about the kinds of statistical tests that could be used. As an illustration, the discrete-discrete combination fits the Chi-square technique, the discrete-continuous combination can be tested with the analysis of variance technique, and the combination of continuous-continuous lends itself to correlation-regression techniques. These are only examples of the kinds of tests that would fit.

The question about level of statistical significance is also a moot one. To many, there is almost something sacred about the .05 level of confidence. In basic research, it may often be necessary to be that precise, but in applied research on human behavior, it may sometines not be necessary to achieve high precision. In certain situations, the .20 level of confidence (80 percent probability) may be precise enough for our purposes. If I am 80 percent certain that the demonstration technique will be more effective than a lecture in a certain situation, the odds are good enough to warrant the use of a demonstration.

Replication. The results of any research project should be checked by replicating the problem area in order to verify the results, although it is not necessary to replicate the precise design. The project should be done over again, with variations in the designs in some way or another. If it's an experiment on learning, use a different group of students, different subject matter, or some other variation, but adhere to the same basic problem area. The reason for doing this is that each human being is different, and no situation is ever exactly the same as the preceding one. This emphasizes the fact that no teaching-learning situation is ever exactly the same so it is important to look at a problem area from different perspectives, and this can best be done by replications under different conditions.

Some General Comments

Up to this point, I hope my comments haven't sounded too critical. They have been designed to offer constructive possibilities for improvement, based on my own personal assessment of some weak areas. In a general framework, therefore, the following comments are offered as a means of improving research programs:

1. A departmental research program should be developed, and it should be based on a general theoretical framework such as the one outlined in the first part of this paper. This will require, of course, a comprehensive intellectual process on the part of the Departmental Faculty in thinking through the needs under their present situation. This is contrary to the present policy and philosophy in many of our Departments where student interests and needs are the primary considerations. This is fine in theory, but in practice it leaves something to be desired because very often the projects selected are extraneous in nature. I am not suggesting, however, that students be forced to select a particular project, but I am suggesting that we provide a framework within which projects can be selected so that a considerable body of knowledge can be amassed.

2. Departmental tradition, on the other hand, in terms of design has stifled improvements in research. In some Departments, if you see one project, you see them all. They are as much alike in design and format as peas in a pod. We must encourage the use of different kinds of designs, utilizing different approaches and methods, so that we can get fresh ways of looking at things.

In retrospect, these comments this morning have been offered as a means of stimulating some thought about research in our general field so that we can raise our standards and ourselves professionally to greater heights. This is the challenge that faces all of us.

ORGANIZING A VOCATIONAL AGRICULTURAL EDUCATION DEPARTMENT FOR EFFECTIVE RESEARCH

Panel Discussion

C. L. Mondart, Sr., Louisiana State University

The primary problem of vocational agriculture today is a lack of solutions to operating problems faced daily by all of its workers; and more especially the local teacher.

Actually, it can be said that the real missing link in vocational agriculture, or for education in general, is research of the kind that is practiced in industry: there, about 5 per cent of funds available are spent on basic research, 20 per cent on applied research and 75 per cent on development.

By comparison, it is estimated that only 10 per cent of the funds expended on educational research are directed towards development. Undoubtedly, improving the quality of instruction is our ultimate goal in research, but, to obtain the actual instructional innovations needed, we must, like industry, organize to more effectively disseminate and implement research findings.

Such an organization involves a great number and variety of resources; yet, perhaps the most important is personnel; people who not only know how to do research, but also know how to handle its findings.

Basically, any kind of organization envisioned must be made up of partnerships, because so many educational levels are affected: the university, the state department of education, the local school board, and the high school and agricultural instructor. Moreover, the state and federal government must often be taken into account.

Research in the department of agricultural education is traditional. Generally, it has been accepted by teacher educators as a part of their work to improve education and vocational agriculture in particular. Even so, most of us would admit that we could be more effective in meeting the need for research.

Unhappily, and yet in our defense, departments of agricultural education generally have been handicapped by lack of funds for research, along with too few staff members trained in research procedures. All too frequently research has been left to the individual staff member and his advanced students. Much research has been accomplished; but regretably, the average department has been without the organization required to disseminate and direct the practical application of such research findings, regardless of their significance.

A reorganization of the department of agricultural education for productive research starts with an understanding of the basic changes to be made in existing practices in vocational agriculture. Perhaps the best way to begin is to recognize that instruction must be better geared for innovation and change--that useful and effective programs must be distinguished from those known to be wasteful and nonproductive--that we must move into a position where we can distinguish among programs of high and low grade. Organization for change may be both difficult and painful. Yet, change we must even though it hurts. Going into an extensive research program requires the involvment of all of our people. Any effective program at the state level must be "our program;" it cannot be a personalized show, for if it is to function usefully its findings and their implications must be taken into all local situations--not just a few schools. Building a reputation for the researcher or allowing research findings to gather dust are unpardonable and common practices to be avoided.

Organization actually commences when we recognize conditions in our program of vocational agriculture that deprive our boys of opportunities we know should be available to them. To achieve quality instruction according to need, some old patterns must be eliminated and new ones substituted--out of this process, problems will grow into focus that can be solved by means of new information; they become bases for research.

Clearly, a vast number of problems exist today. Naming a few might help launch a few of us into a research effort:

I. At the local level

II. At the level of Agricultural Education

III. At the development level

At the Local Level

What knowledge is basic in value to our Vo-Ag students?

What capabilities are most useful to them now and in the future?

Who should prepare for jobs assumed after leaving high school?

Who among our Vo-Ag students should prepare for advanced schooling?

Who should prepare for farming?

At the Level of Agricultural Education

Are professional studies effectively related to the high school's purposes and aims; also the subject matter studies?

Are professional studies geared to improved training programs and instructional technology at the high school level?

Are professional studies related to individualized instruction--to the problems of the disadvantaged?

At the Development Level

Organizing training programs based upon interest, need and student capabilities.

Organizing teaching situations to accomplish individualized instruction and team teaching.

In considering a problem or a series of problems, it is still a fact that both basic and applied research are necessary.. Basic information may prove of great interest, yet it is useless unless applied in actual instruction. Just as scientific findings in medicine are brought into the sickroom so must the results of educational research find its way to the classroom.

It is logical to feel that a research effort must begin with the department head who is expected to organize his staff to pursue its research function. Presumably, he will act to stimulate and encourage basic and applied research in the various areas of vocational agriculture. Under his leadership, staff members at the state level will determine problem areas in need of research.

The kind of information required by the problems considered, together with its application, will determine the resources to be involved in the research: personnel, financing and cooperating schools, teachers and private enterprise. Assembling these resources is a cooperative act, shared by the university; the state department of education, local school boards, agricultural teachers, and any other interested parties. Such action can take place only under the leadership of the department head, who is also responsible for coordinating such resources after research is undertaken.

Personnel and money in combination make a core for a functional research program. Actually, acquiring necessary financing may prove less of a problem than identifying capable researchers. Fortunate indeed is the department having staff members who possess research talent and interests. They can be pressed into service according to their capabilities. Besides, they can help train others who must be included in some phase of the entire research design.

Attracting new personnel solely for research has its disadvantages, although such action is necessary in the absence of trained researchers. Newcomers must overcome the time required to study and evaluate the state program of work, for it is through their evaluative function that researchers are able to do effective research. Generally, it might be argued that departments of agricultural education should be better organized to accomplish functional research. What adjustments to make will undoubtedly depend upon circumstances known only to those involved. Yet, some efforts at doing research are known to be more fruitful than others. Regardless of local conditions, all staff members should be functional at some level in the total research design. Any comprehensive research program involving planning, data gathering, reporting, and implementation will require the talents of all staff members, in addition to personnel at the supervisory levels.

Any organization envisioned should be flexible. So much is at stake that no talent or interests should be overlooked; in fact, research at the department level must be a "team" effort. No one individual engaged in research--however fruitful his work may prove--can hope to overcome educational policy and practice which are so frequently out-of-date but have a strong resistance to change.

What I have been trying to say is that every department of agricultural education should be tied into a research and development program to help keep it and vocational agriculture abreast of changing practices and training needs.

All staff members should be involved in some phase of a research and development program, according to their interests and capabilities. In no instance can research be justified when it ends with the act of gathering data; the dissemination and use of new information is really the pay-off; hence, staff members in agricultural education also have the responsibility of instructing others how to actually do something about research findings.

It follows that research must be a result of a total committment of those in agricultural education. Any organization structured to plan and administer a full-fledged research program must necessarily be flexible enough to include all who can and need to make a contribution. The practice so traditional of identifying one person in a department, perhaps assisted by graduate assistants and secretarial help, may suffice for gathering new information, but it will fall way short of its implementation.

Flexibility in assignments and use of time and talent will make research much more attractive to personnel and certainly will be more rewarding to all who need to share in benefits.

AN APPROACH TO ORGANIZING A VOCATIONAL AGRICULTURAL EDUCATION DEPARTMENT FOR EFFECTIVE RESEARCH

James F. Shill, Mississippi State University

Perhaps at no other time in the history of agricultural education has an increased effort in relevant research been so vital. We find critics on all sides decrying our so-called inability to move into the "modern world of work." Blanket indictments, implications, half-truths, and outright falsehoods made be so-called knowledgeable persons toward agricultural education are almost daily occurrences. We are quickly approaching the point where research in our departments no longer can be considered simply excellent training for graduate students or extra-curricular activities for staff members, if we are to have our "day in court." Gentlemen, the prosecution is summing up its case. Will our defense be based on facts (research) or on hunches?

The late Dr. H. M. Hamlin shocked teacher educators in the September 1966, issue of the American Vocational Journal when he wrote, "Much of what we (vocational researchers) have done has been narrow, insignificant, and amateurish." Perhaps this statement would have been simply shrugged off as just another attack if it had not come from among our own ranks. However, it has caused many among us to do some critical soul-searching.

Role of Research in the Department

Before each department attempts to define its role in research, one basic question must be answered by the staff. Does the department have the same responsibility for developing human resources in agricultral education through research as the agronomy department does in developing a new variety or corn or other crop? If the answer to the question is in the affirmative, then the role becomes somewhat clearer and more difficult to fulfill. The department, because of necessity, must abandon the traditional role of only a producer of new knowledge and research indoctrinator of graduate students.

For the department to play its most effective role in research, its research must have direct influence upon program development and policy change within the schools in its service area. Perhaps many of us would agree that apparently our research has been slow in filtering down into the schools in the past. If this situation is to be corrected, the department's research role must take on new dimensions. Unlike the agronomy department, who is able to turn the finished research product over to the extension service for dissemination and implementation by staff members in each county, our research tends to terminate either at the findings stage or in some cases, in the dissemination stage. Implementation of research findings must be included in the department's overall research role if research is to have immediate and direct influence upon local school program development and policy change. If we are to close the research-practice gap in agricultural education, we must visualize the department's role in four major divisions: (1) research; (2) development; (3) dissemination; and (4) implementation.

Critique of Past Research Efforts

As teacher educators we all know what has been right with our research efforts in the past, and they do not need reiterating at this point. However, it might be well for us to look critically at what may have been some of our weaker points in the past. Hopefully, this is what Dr. Hamlin had in mind when he "socked-it-to-us." Likewise, I hope his intention was to make us search out our weaknesses and build them into our strengths.

When we look at our research on the shelves of our departments, does it remind us of stairs leading up in a specific direction, or does it resemble a "modern" painting with a "dab" here and a "dab" there, with little or not continuity? The past reaearch efforts in our departments can probably be placed into four major categories:

1. Limited Focus Problem Research -- These are generally the efforts of graduate students working toward the Master's degree. They add to our general knowledge, are usually local in nature; they may or may not have general applicability. The findings are generally not disseminated or implemented into program development or policy changes;

2. Academically Respectable Research -- These are generally the efforts of doctoral students. This category of research effort could have general applicability to practitioners, but pertinent results are generally buried by elaborate statistical techniques, educational jargon and a tidal wave of words to which many practitioners are seemingly allergic. Their results usually have limited dissemination and implementation;

3. Staff Interest Research -- These are generally worthwhile research efforts conducted spasmodically by certain of the staff members as their interest arise in special problems. The results may or may not be widely disseminated or implemented; and

4. Cafeteria Research -- This category of research has made its appearance on our shelves in this decade. It demands that our limited research efforts (if outside funding is to be received) be directed toward the whimsical focus of various funding agencies despite the relevance to an individual state's needs.

Regardless of the categories of research we have done in the past, or will do in the future, it has been and will continue to be the staff who determines each department's research effort. Before determining our future objectives in each department, it might be well to analyze the staff as to research effort. Generally, teacher-trainer staffs can be divided into four groups according to past research efforts.

The first group we might refer to as the "terminal researchers." This group is composed of our colleagues who have terminated all affiliations with research efforts after receiving their degrees. Their major contact with research is to serve on a graduate student's committee or to be trapped in a meeting where someone slipped in a research report. This is the group that Dr. Earl Webb referred to as the BOOR's (burned out on research) in the September 1968 issue of the American Association of Teacher Educators in Agriculture Journal.

A second group might be labeled as "laissez-faire researchers." These are those among us who view their role in the departmental research effort as being vicarious in nature. That is, they maintain communication with research through affiliations, readings, and directing graduate student's research, but they do not produce research themselves.

Another group we might allude to as the "sporadic researchers." They work from time-to-time on research and publish research reports spasmodically, but do not devote a portion of the professional time continuously to research efforts.

The final group of our colleagues might be referred to as "perpetual researchers." That is, they devote a portion of their professional time continuously to research and publish research reports periodically. They undoubtedly have been the mainstay of our research efforts within the departments.

The number of staff members found in each of the above groups will determine to a high degree the strength or weakness of our departmental research. If we are unwilling or unable to strengthen our research efforts through more staff involvement and other means, we will find more and more researchers (both from within and without education) who are more than willing to take over our task.

An Approach to Effective Research

A departmental research advisory committee should be appointed to give direction to research efforts. Representation should be appointed from staff members, vo-ag teachers, state supervisory staff, RCU staff, other vocational services and other interested individuals.

Direction should be given to research efforts through long-term and short-term planning. Long-term plans should be on a six to ten year basis and short-term plans on a two or three year basis. Priorities should be included in both plans.

All departmental research (conducted by either staff or graduate students) should be confined to focus on departmental research plans and priorities.

All staff members should have a minimum of 15-25 percent of their teaching, administrative, or other load time scheduled for research activities.

An annual appropriation from university research funds should serve as a base for research activities, so that withdrawal of outside funding will not cause an abort of the entire research effort in the department.

Undergraduate students, as well as graduate students, should be involved in collecting field data and other research activities.

Research findings should be disseminated in popular form (such as extension bulletins) rather than in technical report form to local educational agencies.

Staff members should be involved in the implementation of researching findings for program development and policy change in local educational units through inservice courses, workshops, and in cooperation with individual schools.

Evaluation of departmental research efforts should be a continuous activity by the staff members, advisory committee, graduate students, and outside consultants.

Overall departmental research reports delineating plans, priorities, activities, staff, graduate students, advisory committee members, consultants, abstracts and bibliography should be widely disseminated at completion of short-term and long-term plans.

SHOULD WE ORGANIZE FOR RESEARCH?

Earl T. Carpenter
Clemson University

Organizing a department of agricultural education to facilitate research would be a difficult task. Present staff members are not really research oriented. They, like education professors in general, aren't interested in research, and the available staff to supervise student research is overworked. Much of what we have termed research might more aptly be called social bookkeeping. Our fiscal ties demand more teaching and service, and offer little encouragement for research. And finally educational administrators really do not want research results anyway.

This is a discouraging set of statements. What, you may ask, of the hundreds of education dissertations, the thousands of masters theses and reports and the countless other publications? I submit that these are mostly required activities for graduate degrees, or for professional security and advancement if done by staff members. Much of the staff research has been undertaken more to maintain the status quo than to unravel the intracacies of an educational problem. The truth is that for most educators the dissertation is the ultimate research achievement and not the beginning of a research career as is the case of most holders of a doctorate in other social science fields.

Dissertations of educators are pretty good efforts, in general. They probably aren't nearly as good, however, as could have been accomplished by potential educational researchers who have been driven to other social science fields before, or immediately after, acquiring their B.S. in Education. We give this latter group a choice: get out and teach for years, or get out! Many of the best prospective researchers are poor prospects for teachers. Some get out without trying to teach; others teach, often fail and then get out. Who knows how many later become fine researchers in psychology, sociology, economics or in their major teaching field. Many bright young men are not good teaching prospects because of their personalities, interests or for other good reasons. Until we recognize that these same reasons may often constitute attributes for a research career, we will be denied some of the best talent that could be brought to bear on researchable problems in education.

So, those of us here wanted to be teachers, but we've changed our minds--perhaps only partially. Those who really wanted to be researchers aren't here. And, wherever they are in research their training was very likely much superior to ours. Berelson reported by fields, the mean number of dissertations supervised by one professor as follows:

Education	5.0
Humanities	2.1
Social Sciences	2.8
Biological Sciences	2.2

Fifteen percent of the dissertation supervisors were assisting 10 or more graduate students with their research. Part of the reason for the shortage of professors to supervise research is the outside organizations including the RCU's and REL's have tapped some of the best talent available..

Incidentally, Berelson also found that educators generally are single authors of research publications. Team research would seen especially appropriate when problems are in a setting so complex as the educational system. Berelson's comparisons show the percent of publications by single authors in the following fields.

Education	80%
Chemistry	17%
Psychology	50%
Biology	30%

If research is a term to describe an activity that has a theoretical base which involves careful study of a problem leading to a clear, concise statement of the problem and development of a reasonable hypothesis, etc., then, much of what is called research in the field of education might be called more appropriately "social bookkeeping." Census taking is, of course, in this category; but also are such activities as follow-up studies, most competency studies and many other data-collecting endeavors of educators. The number of these which are performed as a defense of existing practice rather than to better understand the educational process would be difficult to determine. It is safe to say that the impact of such studies on educational change hasn't been substantial.

Departments of agricultural education are primarily teaching and service units. For the most part staff members feel more comfortable in this type of activity for reasons cited above. Too, most of us are funded directly by state agencies which expect us to teach and do an assortment of services for them. Finally, pure, unbiased research of educational problems might lead to the destruction of the establishment that keeps us in business. Can we afford to attempt to solve problems that might shatter the state administrative structure or, heaven forbid, the agricultural education department itself?

Public schools don't really want research results anyway. Unlike the businessman downtown, they don't need to improve to survive. A successful school administrator may be more interested in keeping costs down than in improving his products. Since quality of the school output is invisible, product research is difficult.

Furthermore, school administrators are skeptical of research results. As indicated above the results may not be much good anyway. And if they are good they may cost more and require difficult adjustments that are hard to sell to staff and constituents. Then, if the innovation doesn't work well embarrassment is sure to follow. (Equipment, buildings and other hardware which have visibility seem to constitute an important exception to this argument.)

We have observed five very discouraging arguments against establishing a strong viable research activity in an agricultural education department. They suggest that such an activity would be difficult indeed, and even if the research were sound, innovative and useful the road to adoption of the results might be even more difficult.

THE FUNCTION OF THE RCU--RELATIONSHIP TO TEACHER EDUCATION INSTITUTIONS, STATE DEPARTMENTS OF EDUCATION AND LOCAL SCHOOL SYSTEMS

by

William W. Stevenson, Director
Oklahoma Research Coordinating Unit

First let me restate and redefine the topic which I have been given. I would prefer that the title read "The Function(s) of the RCU--Relationship(s) to Teacher Education (Personnel), State Department of Education (Personnel) and Local School System (Personnel)." You will notice that I have pluralized both the words function and relationship. Both the functions and the relationships of the RCU staffs are many and varied--thus my reason for making them plural. This is a complex and intricate (and I might say vital) question as we try to understand how the RCU's can relate most effectively with others in vocational education. I say these relationships are vital in the sense that to ignore them or to be ineffective in establishing them can mean the vitiation of the unit or recidivism for vocational education.

I have also added the word personnel to each of the units mentioned with which the RCU may or must have relationships. I don't know that I can ever relate to institutions or departments or systems--but I can hopefully relate to individuals within those units. I would like to make one other point about the changes in the title I was given. This last point about the title is that the relationship which may be established between say teacher education personnel and the RCU may be quite different in form and substance from the relationship between an individual from the state department and the RCU. I think there are some basic differences in these different types of people which require quite different types of approaches in order to effectively relate. I think I know of some RCU Directors who are no longer with us because they were unaware of or ignore these differences. I want to get your reaction to my estimate of those differences in a short time.

First, let us see if we can establish the place of research in vocational education. Dr. Robert Taylor, Director of the Center for Vocational-Technical Education Research, Ohio State University in his Preface to the "Report of a National Seminar on Agricultural Education--Program Development and Research," said that there never was a better climate or greater urgency for replanning programs of agricultural education. This was in August of 1965. I am not sure about the better climate, but I am sure that the greater urgency not only still exists but has increased exponentially since this statement was made. I think we have reached the point where we must look realistically at the needs of society in general and our students in particular and make adjustments in programs which reflect those needs. I think research can help us take that look. That long searching, critical look which may require change. If our programs are perfect, if all our students are being trained effectively for the world of work and for society, then we don't need research. If things are not perfect, then perhaps research can be of some use in helping chart the way for change.

At the Center conference mentioned above, Bob Taylor in his speech entitled "The Need for State Programs of Research and Development", spoke of research problems and limitations so complex and interrelated as to almost be syndromes. Dr. Taylor did point out that these problems and limitations are not limited to agricultural education or even to vocational education; nor was he saying that all or any of these exist in any particular state. I would be more bold (or perhaps more foolish) and say that they existed and still exist in every state. The first syndrome is the widespread misunderstanding of research--what it is, how it functions, what it can do, what it cannot do. Secondly, according to Dr. Taylor, we had failed to recognize the dynamics, the climate which research must have to properly function. A third cluster of problems is grouped around the fact that the wrong people are doing research--only graduate student research, lack of interdisciplinary and team research and time restrictions on staff members of teacher education departments. The fourth syndrome pointed to was the fact that we have not involved decision makers in our research efforts. We have viewed research in too limited and restricted a context and have failed to coordinate research between departments, between disciplines, and between states. Dr. Taylor concludes this part of his remarks with this statement, "We need in each state comprehensive, planned, purposeful means--an organized structure--for renewing vocational agriculture;" and he speaks of a "systematic procedure for innovation."

I review this 1965 statement in order that we may gauge our own progress in this area. At first glance it would appear that our problems have not changed and this is what I intended to say when I started this part of the report. But let us look more closely; let us investigate more deeply. I believe the "Research Handbook for Vocational-Technical Education" which is the product of the National Conference on Research held in Oklahoma City this year--I believe this Handbook gives a different picture and a truer one of our present situation in research. You won't find many of the old syndromes mentioned by Dr. Taylor in the "Handbook on Research." I believe that researchers have matured past the point of being concerned about whether the climate is right for research and have decided to live and work in the same climate as everyone else--the real world. We no longer, at least in our better moments, fret about whether others expect too little or too much of us (research); we have decided, I hope, that there are no wrong people for research but that we must involve all of our fellow workers in the research development process.

The syndromes mentioned above were real for 1965 and I am sure a good case could be made for them in 1969--but my opinion is that we are now looking at our function from a different angle. We have shed the Prima Donna complex in which all must be just right for us, we have come down off the pedestal of pure and controlled conditions to wrestle with the real problems which must be solved if vocational education is to reach its potential effectiveness. The general topic of the upcoming National Conference of RCU Directors will be "The Research Coordinating Unit--A Supportive Service for Vocational-Technical Education." This statement from the "Research Handbook for Vocational-Technical Education" illustrates my point.

> To summarize, research is viewed as a national priority primarily because of what it can do for the other aspects of the vocational program. In its narrowest sense research can be evaluation, which leads to a restructuring and a pinpointing of problem areas in vocational education. In its broadest sense research is systematic change, an attempt to supplement and develop different approaches to solve vocational education problems. This latter rationale develops an approach which results in the adoption of different methods into an existing target system. This approach requires emphasis on dissemination of information, on repackaging of research findings, and upon change agents to assist users of the repackaged information.
>
> All organizations must be willing to look at alternative ways of achieving their goals if they are to remain pliable and dynamic. Research can provide the procedures for testing alternative solutions to problems.

Another example is this description of a researcher which came out of the National Conference on Research.

> A researcher works at the "growing edge" of vocational education practice. He must have the stamina to resist foregone conclusions, the tenacity to hold on to a good idea when results look dim, and the ability to encourage educational practitioners towards improved practices. His work should result in creative endeavour.

I suppose that the point I am trying to make with all of this is that we as researchers are now less concerned with changing the environment in which we work so that ideal conditions for research exist, but rather that we are attempting to make our research a part of the everyday, problem-filled, decision-requiring life of vocational education. We are becoming a part of the system--a unique, sometimes irritating, questioning, abrasive part--but still a part of the ongoing, real life system of vocational education.

Public Law 90-576 acknowledges the need to insert a quality control component into existing vocational programs. State Boards of Vocational Education are required by law to specify methods and procedures for evaluation of programs. Such activity necessitates the need to translate some of the lofty sounding education goals into measurable information. Objective evaluation sorely needs the expertise of the qualified researcher. An ongoing subsystem of research and evaluation should undergird planning and revision of existing vocational programs.

Another use for programatic research lies in the introduction of innovative activities into the existing system of vocational and technical education. The courage to try the unfamiliar, a willingness to consider practices which have not yet been sanctioned by one's peers, and the risk of failure by a vocational teacher in a local unprotected setting demands supportative and facilitating behavior by state staff. Renewing the system of vocational-technical education depends in part on the imagination of the researcher, the support of the supervisory staff, and the creativity of teachers. State staff personnel, both supervisors and teacher educators, have a responsibility to support the evaluation of a good idea.

A programatic researcher functions as a liaison between discipline-orientated research of the university and mission-oriented problems of the practitioners. He must know the phenomenon being researched. A sharp analytical ability helps him identify the essence of an idea. This ability becomes critical when abstracting research reports for practitioners or when consulting with vocational teachers who may only be beginning to crystalize an innovation. The programatic researcher cannot survive in the still, cold atmosphere of strict institutional regulations. Some opportunity must be available to adjust procedures in light of accepted needs.

Now to the functions and relationships with the various groups mentioned in the subject--teacher educators, state department personnel, and local school people. Can we identify certain characteristics of these groups in order that we may design strategies which will allow us to more effectively work together in applying the new knowledge of research to the problems of occupational education? I would like to name and discuss a few of these characteristics which I have in mind and see how they effect the course to be followed by research oriented persons whether in universities, state departments or local schools.

There are certain physical characteristics which limit, to a degree, the extent or intensity of the relationships which may be maintained. Mere physical distance may be a limiting factor. In the evaluation of RCU's by Dr. Boldhammer of Oregon State University it was found that those RCU's in the State Departments maintained closer relations with state department personnel than did Units which were located within a University. It was also determined that University RCU's maintained closer relations with university researchers than did Units in state departments. This is, of course, only what we would expect to find; but it does serve to point out that RCU personnel should make a conscious effort to communicate closely with those persons who may be farther removed from our natural areas of circulation. And conversely, personnel connected with the other agencies should make a concomitant effort to relate to RCU personnel when physically far removed.

Time and numbers of people are other physical factors which limit to some degree the ability of the units to establish and maintain close relationships with some groups. I just had a call from a Home Economics supervisor asking me to speak to her four hundred teachers during our summer conference. She said "take five or ten minutes to tell our teachers all about research and proposal writing!" We know that the most effective way to disseminate information is through personal, face-to-face contact--but how do you do this with 1500 teachers who all need some insight into the information which we have available. Some alternative strategies must be developed and must be accepted as "the best we can do under the circumstances."

A more interesting and, I am sure, more important type of limitation which may affect our relationships with different groups is the internal differences in character or personality which may distinguish our clientele. What are some basic differences between, for instance, teacher educators and state department personnel? I realize that I am on dangerous ground when I begin to try to attribute to groups of people certain characteristics; however, I do believe that there are distinguishable traits which should be considered in planning approaches to effective communication. It seems to me that one of the differences between teacher educators and state department personnel is the amount of critical questioning which is acceptable to them. Those in a university setting are more open to and less threatened by questions which challenge the quality or value of existing practices. It seems to me that the practitioner is not--as is usually claimed--more practical but more inclined to talk and plan on a more philosophical base.

It appears to me that state department staffs are more open to change and are, in fact, seeking improved methods to a greater extent than those in the university. Local school personnel are more dissatisfied with status quo and more inclined to experiment with new, even untried, approaches. We just finished asking vocational teachers the following question: "If you had $250 to $500 what would you do to improve your program in vocational education? Give us a one page outline of your idea and if it sounds logical, we will fund the project." We got 74 proposals from local teachers, 26 of which we will probably fund for about $8,400. These proposals came from all divisions and showed remarkably innovative thinking.

We've been offering microfiche copies of selected research reports to all vocational personnel in the state--the teachers are the people who have ordered reports--not supervisors or even teacher educators. I think we know too little about the people who may be users of research services--and in many instances what we do know is wrong. Deeper study, a closer look, and greater sensitivity to differences and needs of our cliental should certainly be a part of our efforts to design research programs of greater value to vocational educators.

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RESEARCH STRATEGIES FOR THE SEVENTIES*

prepared by

John K. Coster
Director and Professor of Agricultural Education
and
J. K. Dane
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Introduction

Whether we like it or not, agricultural education has occupied a defensive position since World War II. And whether we admit it or not, much of our energy during the past quarter of a century has been directed toward defending the position. Agriculture, so our critics have said, is a declining industry, and a nation ought not allocate its scarce resources to the development of a declining industry. In response to this criticism, we have taken two basic positions: (1) the consolidation of farms and the increased size and magnitude of farm operations require a higher degree of educated managerial ability than did the operations of farms prior to farm consolidation, and (2) employment in agricultural industry, broadly defined, has not declined, but rather has shifted to the application of technology and specialization; to the industrial complex. We have made these positions abundantly clear to ourselves; there are times, however, when it may be questioned whether many persons outside our fraternity were listening. Our position, unfortunately, has neither been strengthened by the Department of Labor's system of classifying occupations nor by the Department of Commerce's system of classifying industries.

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Whether we admit it or not, much of our research during the past two decades has been conducted to support the defensive position. When university officials threatened to curtail the enrollment of high ability students, and suggested that they substitute mathematics and science for vocational agriculture in high school, we turned to research as a defense mechanism, and conducted numerous studies designed to inquire as to whether students who had vocational agriculture in high school fared less well in college than students who had progressed to college on an academic curriculum. When the curtailment of funds for agricultural education in public schools was threatened due to the decline both in the numbers of persons engaged in farming and the percent of the total labor force engaged in farming, we turned to research to demonstrate that the knowledges and skills developed through vocational agriculture were thought to be useful in agricultural occupations other than farming. When the issue arose as to whether education in agriculture should be continued under the provisions of Federal law, the Panel of Consultants on Vocational Education commissioned two economists at North Carolina State University to conduct a study to determine projected employment possibilities in occupations in agriculture other than farming. Neither research nor the researchers are criticized; what is to be examined is the defensive mood which generated the need for new knowledge.

The problems of agricultural education, and the defensive position to which we have alluded, are a product of success. We have participated in a training enterprise augmented by technological advances which have maximized efficiency and minimized manpower requirements in agriculture. Our accolade has been our near annihilation.

We demonstrated our capacity for adaptability in the decade of the 60's. We altered our objectives, expanded our clientele, established our programs in urban centers, and extended our programs to postsecondary institutions. In the late 50's and early 60's, agricultural education produced a cadre of professionals who questioned existing programs and instituted work directed toward new programs. These professionals paved the way for an expanded program in agricultural education, buttressed by research which, fortunately, anticipated the changes in agricultural education highlighted in the report of the Panel of Consultants on Vocational Education and manifested in the Vocational Education Act of 1963.

The challenge of adaptability of the 60's was met. The place of research in agricultural education was established in many institutions and the research findings led to new programs, new curriculums, and new solutions to ever-pressing problems.

The changes that were effected in the decade of the sixties may be inadequate for the decade of the seventies. The legislation of the sixties carries the intent that a marked shift in program development and organization was to occur with the enactment of the 1968 Act. The tenor of House Report 1647 and Senate Report 1386 indicate clearly that a reconstruction, not a modification was desired. The disquieting aspect is that what was done may not be enough. We have been challenged to modify programs. Now we are challenged to change the direction of vocational education in light of national goals.

The Challenge for Agricultural Education

Let us turn now to the challenge for agricultural education in the 70's. Let it be said that the start of the 70's will see the discarding of the defensive position and the institution of an offensive position. The challenge of the 70's takes its direction from the national goals which for all practical purposes obliterate the traditional vocational fields as we have known them and directs vocational educators to develop programs designed to serve the occupational needs of all persons and groups in a community. The challenge is that agricultural education should be reconstituted as rural education and that agricultural educators assume the responsibility for developing personnel and programs designed to provide adequate programs of vocational education for rural America.

The challenge has been cast in the form of national goals for vocational education, set by Congress. The Federal government has acquired the right to make this challenge through its role as a primary funding agency for vocational education research. In fact, the position of vocational education is somewhat analagous to that of the scientific community in 1961 when the late President Kennedy challenged them to the task of placing a man on the moon by 1970. The challenge to vocational education, however, was a result of evolution rather than a spontaneous challenge. The process of the challenge was begun by the Panel of Consultants on Vocational Education, whose recommendations were later manifested in the Vocational Act of 1963. Later, the progress achieved under the Vocational Education Act of 1963 was reviewed in House Report 1647, and Senate Report 1386. These reports, together with the recommendations of The Advisory Council on Vocational Education, contributed to the complete statement of the challenge, as it appears in the Vocational Education Amendments of 1968.

Thus far, the legislative branch has been kind to vocational education, at least so far as criticism is concerned. Although the House and Senate reports were critical of both the U. S. Office of Education and the individual states for their failure to attain the goals of Congress as specified or implied in the Vocational Education Act of 1963, the Senate Report expressed confidence in vocational education and in vocational educators:

> The capacity of traditional vocational education to cope with these facts of life is doubted by many educators. Some have suggested that vocational education no longer has a reason for

> being. The committee disagrees with those who see no future in vocational and technical education. The committee believes that the Nation's educators can bring about the changes in vocational and technical education which will make those programs fill what seems to be the void in the future of our educational system.

While the confidence of the Senate thus expressed is heartening, there is something ominous there too. Obviously, there is some disagreement over whether or not vocational education can meet the challenge which has been placed before it. There is only one inference to be drawn. If we fail in the task, some one else shall have to do it for us.

Now, let us look at the goals which have been set for vocational education, then examine the area for which agricultural education should assume responsibility, and follow with the strategies for research in the decade ahead.

The National Goals

The direction of continuing development in agricultural education may be inferred from national goals set up by Congress for vocational education. The goals, both explicit and implicit, are reflected in the national legislation covering vocational education. The explicit goals are quite clear, and they are contained in the declaration of the most recent act, the Vocational Education Amendments of 1968.

> It is the purpose of this title to authorize Federal grants to States to assist them to maintain, extend, and improve existing programs of vocational education, and to develop new programs of vocational education, and to provide part-time employment for youths who need the earnings from such employment to continue their vocational education on a full-time basis, so that persons of all ages in all communities of these states--those in high school, those who have completed or discontinued their formal education and are preparing to enter the labor market, those who have already entered the labor market but need to upgrade their skills or learn new ones, those with special educational handicaps, and those in post-secondary schools--will have ready access to vocational training or retraining which is of high quality, which is gainful employment, and which is suited to their needs, interests, and ability to benefit from such training.

Nothing could be more clear than the fact that this action represents a demand on the part of society that each individual be provided with the requisite skills and knowledge which will enable him to perform effectively as a productive member of American society.

The implicit goals set for vocational education are closely related to, and interwoven with, the national goals of alleviating poverty, and underemployment, and maintaining a healthy dynamic economy. The implicit goals, themselves, may be stated in terms of a debt. That is, vocational education owes to each person who is capable of participating in the economic productivity of the nation, an opportunity to obtain the necessary skills and knowledge enabling him to enter into and progress in a career based on the occupational demands of society and the attribute system of the individual. Further, there is interest that vocational education function as a more viable entity in assisting our society in that task of becoming a greater and more progressive nation.

These explicit and implicit goals should be recognized for what they are, not simply abstract notions, but rather a mandate from society, expressed through the medium of national legislation, which is intended to guide our direction. It does not mean that basic research should be abandoned, nor that projects not related to this direction are of no value; however, it does establish a national priority which all of us in vocational education should recognize, and all of us should keep firmly in mind in our contemplation of research strategies.

The Magnitude of the Problem

Bearing in mind our national challenge, and our national goals, let us examine the size of the problem with which we are faced, and review some of the facts to be considered. The first consideration is the absolute size of the rural population of America. In 1964, the rural population was estimated at 55.3 million people, a number exceeding the total population of the United States in 1880. If this population were constituted as a nation within itself, this nation of rural Americans would replace the United Kingdom in ranking as the tenth largest in the world. According to the findings of the President's Advisory Commission on Rural Poverty, 14 million of these rural people were living in poverty, a fact which the commission referred to as a "national disgrace."

The second fact to be confronted is that of migration. Since the earliest days of the cities, the population of urban areas has been sustained and augmented through the migration of persons from rural areas to urban centers. With this heavy rural to urban migration still continuing, rural school units have still not designed programs to prepare persons for occupations which are not located in the local community. The Advisory Council on Vocational Education emphasized this point when it stated that "Rural schools have given little attention to the occupational needs of students who migrate to urban centers." Thus, not only have rural schools failed to provide appropriate education for all members of their community but through their contribution of unskilled people to the urban centers, they have helped to contribute to an urban situation which is now draining funds and energies from the rural environment.

The third consideration is that of the non-migrant. Within this group lie the bulk of the 14 million poor people mentioned in the report of the Commission on Rural Poverty. These 14 million people constitute a disproportionate 40.9 per cent of the total poor population in the United States. Contrary to a popular impression, not all of these rural poor are Negroes nor do they all live on farms. In fact, of the 14 million rural poor, 11 million are white and only one family in four lives on a farm.

Finally, we must confront the inadequacy of vocational education in rural areas. Manpower needs in American Society are in transition. A changing industrial and occupational mix is in evidence. The shift from primarily a blue-collar and agricultural labor force to a more sophisticated technology continues.

In all the vocational acts beginning with the Smith-Hughes Act of 1917, the Congress has been responsive to the shift in manpower needs. The George-Barden Act of 1946 was enacted to meet changes in labor force demands arising since 1917. The Vocational Education Act of 1917 came as the result of shifting manpower needs and funds were made available to provide training programs for occupational not covered by the previous Acts.

The Vocational Education Act of 1963 embodied two basic conceptual changes in vocational education that were recommended by the Panel of Consultants on Vocational Education:

1. That vocational education must be redirected from training in a few selected occupations to preparing all groups in the community for their place in the world of work, regardless of occupations, and

2. That vocational education must become responsive to the urgent needs of persons with special difficulties that prevent them from succeeding in a regular vocational program.

The Advisory Council on Vocational Education stated that "There is little evidence that either of these major purposes has been accomplished this far." It further declared that "The second main objective--to serve the youths with special needs--has hardly been touched."

The implications of the two new basic purposes which were introduced into the vocational education system of the nation, for rural and urban peoples alike, is that operation of programs have not been consistent with national intent as manifested in the act. This condition is one indication of the inadequacy of rural programs of vocational education.

A second indication of inadequacy of rural problems is lodged in the inherent limitations of rural schools to provide adequately for the preparation of youths and adults for employment in the contemporary labor force. The Advisory Council stated that:

> Rural high schools tend to be too small to offer more than agriculture, home economics, and office education. Most of their students will ultimately seek urban jobs but have no preparation

> for urban life. This deficiency has been particularly serious for rural southern Negroes whose resultant plight can be observed in most large cities of the land.

The Advisory Council pointed out that vocational education has been most inadequate for those persons who need it most. The President's Advisory Commission on Rural Poverty concurred and stated unequivocally that rural people have been shortchanged by an inadequate educational system. Subsequently, in the report, the Commission deplored the poor quality of occupational education in public schools, and recommended:

> That the Federal Government in cooperation with the States develop and expand occupational education programs that will enable students to adapt to a changing society. Such programs should be developed at the elementary, high school, and post high school levels.

Research Strategies in the Decade Ahead

Strategy is an excellent word to describe what should be the posture of vocational education research during the next decade. As Webster's Seventh New Collegiate Dictionary points out, strategy is: "the art of devising or employing plans or strategems toward a goal." It is important to consider this definition, because it points out something which is not always obvious. That is, strategy implies not only methodology, but direction. In the past, the individual researcher has more or less charted his own course. This course has been set in the direction of basic research, that is, the generation of new knowledge without reference to a specific set of problems or conditions. Research, *per se*, generates its own goal. Applied research, contrarily, is goal oriented; that is the goals of the research activity are directed toward an external, rather than an internal, orientation of the research. The objective of this type of research is the solution of specific problems, or the attainment of specific goals.

Obviously, research in education must encompass not only basic and applied reserach, but also developmental, experimental, and pilot and demonstration projects; innovative and exemplary programs; and dissemination and research utilization. Although basic research is often high-risk, with no readily discernable pay-off, it often does eventually provide a solution to more practical problems. Certainly, any viable research and development program must provide for a sound balance between basic research and research activities directed toward the solution of more immediate problems. However, it must be recognized that basic research, because it is high-risk research, generates very little support from pragmatically oriented administrators or program managers. When fiscal resources are scarce, and when priorities for research must be carefully weighed, such research may generate little or no support from funding agencies. From a purely practical point of view, in a time when federal spending on vocational education research is being reduced, it is apparent that more and more of our research will be applied research.

The strategies themselves may be divided into short-range and long-range strategies. This division occurs between that which must be done immediately, and that which may accommodate developmental time.

Short-Range Needs

The short-term strategy for research in agricultural education is to expedite the attainment of national goals manifested in the 1963 and 1968 Acts. The justification for the support of research under Part C of the Act is to invent new solutions for the problems that arise in the implementation of the concepts of the Act, and the justification of Part D of the Act, Exemplary Programs and Projects, is to utilize the products of research in developing new models for vocational education, according to the Senate Report.

The immediate strategy for research in agricultural education is to concentrate on research and development programs and projects and on research utilization programs and projects that will provide immediate answers to the problems inherent in the implementation of the Vocational Education Amendments of 1968. This posture is not intended to postpone the initiation of long-range research programs addressed to issues and problems that ultimately must be resolved, but the major strategy must be one of immediacy.

The key to immediacy is the identification of crucial and penetrating problems whose resolution is essential if the programmatic goals are to be attained. Here a strategy for strategies is needed. Research in vocational education has been criticized mildly for its fragmentation and for its lack of relevance. Relevance is a matter of degree and as has been indicated previously, is not of immediate concern to the scientist engaged in basic research. In goal-oriented research, encompassing research supported under the provisions of the acts of 1963 and 1968, however, relevance clearly is an issue. Relevance simply means that the research activity is directed toward an operational problem which is militating against the attainment of the goals of the program. There are, however, two dimensions to the problem of relevancy. One dimension relates to the extent to which the program manager can identify and define problems for which solutions are needed in the implementation of the program. The second dimension relates to the extent to which the researcher can operationally define the problem, and design an appropriate program to arrive at a solution. Obviously a team effort is required, and obviously a communication linkage must be established between the program manager and the researcher. The establishment of a communication linkage is one of the most difficult problems to be resolved in the strategy for strategies; it is also one of the most urgent. Indeed, the resolution of this problem is vital to the participation of the university community in the vocational education research program. Research institutes, generally, have demonstrated more flexibility, adaptability and expertise in coping with this problem than the research staff at the universities.

In the development of short-range strategies, development programs and projects and research utilization programs and projects should be accorded high priority. This strategy does not deny the need for the production of new knowledge, but does affirm that primary attention should be given to the utilization of the knowledge that is available in inventing new solutions and developing new models to resolve the immediately pressing problems. Such a strategy should automatically generate the problem areas where long-range research programs are needed.

Developmental programs and projects have been defined by both Bushnell and Swanson. Bushnell describes developmental studies as those which are:

> . . .usually directed at the introduction of new innovations into a specific environment in order to modify the outcomes of whatever occurs in that environment. Development programs seek to invent and engineer new solutions while research seeks to add to our storehouse of knowledge.

Similarly Swanson states that:

> Developmental programs differ from research by the fact that outcomes are known and describable. The objective may be stated in terms of performance specifications. The purpose of developmental projects or programs is to produce materials, techniques, processes, or implements which will accomplish pre-specified objectives. Unlike research projects, developmental projects cannot tolerate negative results.

The immediate problems toward which developmental programs may be oriented include the development of new curricula, models of organization and administration for vocational programs in rural areas, models of vocational education in rural areas, evaluative instruments, and occupational guidance systems.

Research utilization may be related to developmental programs, but its most recent manifestation has been expressed in Part D of the Vocational Education Amendments of 1968, Exemplary Programs and Projects. Although exemplary programs may emerge from the intuitive experience of the developer, there is an overriding concern that exemplary programs, which are expected to develop new models for vocational education, be rooted in pertinent research findings. Exemplary programs, therefore, may be thought of as programs designed to put research into action, or as research utilization programs. Policies for managing exemplary programs may vary; state funds made available under Section 142 (d) of the act may be used to support exemplary programs in local education agencies, whereby developmental programs may be engineered at universities where a more sophisticated technology is available.

The basis of the immediate strategy is to undertake programs and projects where findings of research in the social and behavioral sciences may be utilized in the solution of problems, and to concurrently identify problems that necessitate long-range research programs.

Long-Range Needs

The short-range strategies have been oriented primarily toward program modification, that is, toward the modification of programs of vocational education to serve the vocational training needs of an expanded clientele without reference to the traditional classifications of vocational education programs. The long-range strategies are directed toward program development, that is, toward the development of new programs that will be required to attain the national goals. The distinction is a matter of degree;the assumption is that some problems can be attacked immediately based on the existing knowledge that is available, whereas other problems may require a long-range program of research and development.

One of the most significant changes in the Vocational Education Amendments of 1968, which is more implicit than explicit, is the expanded concept of vocational education to occupational education. Occupational education is mentioned initially in the Act in Part D, and if the Senate Report is considered, relates to the development and introduction of appropriate programs at the junior high school level designed to acquaint pre-adolescents with occupational opportunities and the world of work. The House Report presented a more direct statement:

> . . .The General Subcommittee on Education has concluded that the following five ideas recommended by the Advisory Council (on Vocational Education) deserve serious consideration: (1) any dichotomy between academic education and vocational education is outmoded; (2) developing attitudes, basic educational skills and habits are as important as skill training; (3) prevocational orientation is necessary to introduce pupils to the world of work and provide motivation; (4) meaningful career choices are a legitimate concern of vocational education; (5) vocational programs should be developmental, not terminal, providing maximum options for students to go on to college, pursue postsecondary vocational and technical training, or find employment.

The Center for Occupational Education at North Carolina State University has formulated an even broader definition of occupational education:

Occupational education encompasses educational programs at elementary, junior high, senior high and post-secondary levels designed to assist each person in becoming familiar with and exploring the world of work; and in selecting, preparing for, entering into, and becoming adjusted to a career pattern consistent with his attributes and with occupational demands of society. Occupational education, therefore, includes educational programs specifically designed to prepare the individual for initial entry into a career, for continued progress in his career, and for changing to new careers. In addition, occupational education includes programs designed to expand occupational horizons, develop attitudes and work habits, provide for exploration of the world of work, and provide information on which the individual can act in making career choices in light of alternatives available to him. Further, occupational education provides for the articulation of experiences from elementary schooling through junior and senior high school levels to post-secondary and adult programs; for the articulation between career choice and preparation for employment; for the articulation between school and work; and for the articulation between general and occupational education.

The long-range implications of further development in occupational education are immense. The immediate need is for a model of occupational education which includes subsystems based on function or purpose. Articulation among the several agent levels or groups of persons to be served, between career choice and preparation for employment, between school and work, and between academic and vocational education must be effected.

The long-range strategies include not only research and related activity but also professional development programs which are expected in the future to draw heavily on research as inputs into training.

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A RESEARCH REPORT - TEXAS

by

Earl Webb, Texas A & M University

I would like to give you an overview of what we have done and why we have done it, and just a little of our philosophy in this presentation and if any of you are interested in details, I would be glad to visit with you at a later time. First of all you have to understand that the expansion of Agricultural Education in Texas has included some new programs. One program is what we call our cooperative program based primarily on the same general principles as distributive education and some aspects of the T & I program in which students work part of the day in the business according to a prescribed plan worked out between the employer and the teacher. These programs are sponsored and conducted by teachers of vocational agriculture and cover many occupations that would fall in the category of agriculture by definition.

Then we have another type program which we call pre-employment program, which at the present time embraces three areas: agricultural mechanics, which is farm tractor implement service and repair and another part which has to do with horticulture, and we have also developed some pilot programs in forestry. Now the difference being that in the pre-employment laboratory programs all the instruction is given at the school by the teachers. At the beginning of the pre-employment laboratory programs, or at the time they were being considered, the question arose as to what should be taught, since you have a high school student 17 or 18 years old and with a limited amount of time--what basically should be taught? The State Department of Education invited a group of so-called experts in the field; service managers, business managers, field service men to Austin for a two day conference. It was believed that these individuals would be able to tell the State Department of Education personnel what should be taught.

What really came out of that was a great big thick book and we were told by people in the field that no one knew that much or could do that much. So, Mr. H[illegible]t being confronted with this kind of a problem, came to us and said,"what we really want to know is what is the entry level for employment?" "How can we determine what it is that these young men ought to know and be able to do?" Well, that set forth the problem immediately. We knew what the problem was, what should we include in the course of study and so forth. He said, "could you do this kind of a project?" This is a pretty good way to get a project funded when the administrator comes to you and says "will you do this?" So, basically this was the problem in the area of agricultural mechanics and we took on the area of ornamental horticulture also with just about the same objective.

Now being somewhat oriented in this area of guidance or especially in the area of vocational guidance, as we may define it, I included a second kind of objective; and that was, what does this occupation have to offer a young man? These were the two objectives that we had. Very simply, what should we teach these young men who are going to enter employment, and second, what does this occupation have to offer? We just set about trying to find the answers to these questions.

First, we went to some sources for agricultural machinery and that is what I want to talk about first. My remarks from here until I change will be about agricultural machinery and mechanical trade. To find out what a young man should know and be able to do in the service and repair of machinery, tractors and implements, we went to service managers in the business. The guy in charge of the shop. We first started working with the manager of the business. We found out he generally didn't know much about mechanics, and always sent us to the other man, so we wound up interviewing about 50 service managers that were very, very enthusiastic about this kind of program. In the overall design we had in mind about 40 interviews throughout the state but wound up with about 50 for the simple reasons that we wanted to involve people. In the beginning Mr. Hurt was involved (he is the Director of Agricultural Education). He was involved and he requested that the area supervisors help with the project. They selected the agriculture teachers who were to make the direct interviews. I didn't do any of the interviewing myself except on preliminary work--found out some things that wouldn't work etc. and so I went all over the state to these various places and instructed the agriculture teacher how to conduct an interview. This is the way we obtained the information.

Now, once we had it, we had some decisions to make as to just how to report it so that maximum benefit could be derived from it. There are some ways, gentlemen, that you don't report research and expect anybody to gain anything from it, and one of them is by developing something like this. A great big thing! For our own files and for our own records, we wrote it up in some detail, but you hand this to somebody and they immediately back away from it. So, we developed this pretty much for our own use. This was the little publication that we thought that people might read which just says the opportunities and requirements for entry into the agricultural machinery and mechanical trade in which we set forth the major findings, and I might mention those just briefly in passing.

I'm not going to give you all the nuts and bolts because I assume you don't want them. One of the most startling things that we found regarding the agricultural machinery business in Texas is that there is an extreme shortage of mechanics. We knew that we didn't have enough. If you have had your car in the garage lately you know there is a shortage in the automobile industry too, but we didn't know the real extent of it. We found that in the state of Texas we could employ, if we had them trained, 2,000 mechanics this morning because that situation has not changed, I am sure, since we made the study a few months ago. 2,000!!! Now with the annual turnover that would be anticipated due to pirating and other reasons within the business, they estimate within 5 years we would need about 7,000 trained mechanics to keep the machinery rolling on the farms of our state. This was quite shocking to us until we thought through this thing and realized just what was going on. One thing is, there is no longer a supply because the machinery is so complex, so complicated that these shade tree mechanics can no longer service the machinery and keep it going; and another thing, the pay in our state--I don't know about yours --but the pay in our state is not too good, about $120 per week for 48 hours work, and you can make a lot more money being an electrician or brickmason or something else.

Now what about the boys? Well, first of all we found that the major concern that they had was the boy himself. What kind of a person is he? One thing they keep telling us is get people in this program who have mechanical aptitudes, and it seems to me that one of these days we are going to have to be a little bit selective about people who enter these various kinds of programs. It is unfair, it seems to me, to encourage a young man to enter a trade in which he just can't make a living because he just does not have the aptitude. And this may be unfair to the program and those conducting the program to have a lot of people who do not benefit materially from the program.

Now the second thing, was safety. This is what we ought to be teaching. Another thing is the use of tools which requires a lot of laboratory work, learning how to use those tools. Now we broke this down between knowledge and skills and we found that overall they were really more concerned that this young man understand what a mechanical unit is, its relationship to other mechanical units, how the thing works and why it works. But gentlemen, unless he goes in with skills already developed, he will never be a mechanic. It's just that simple. Because this master mechanic to whom he is assigned to learn the trade just does not have the time to stop and explain why this thing works as it does, etc. Maybe these fellows are working on flat rates and the longer it takes them to do a job, as you know, the less he earns. What do we do with this once we get this kind of information? Whose responsibility is it to carry on through? Well, fellows, whether we like it or not, I think it is our responsibility. Frankly, I would like to complete the projects, make the reports and forget about it and go on and do something else. This is what I'd like to do; but when you hand this material to someone and say this is the results of research, here is what should be taught and they stare at you blankly and show lack of interest; and if you talk very long they will start yawning, you have to realize that your job is not yet done. Our Dean (by-the-way-, this project was being sponsored jointly by the RCU unit at Austin and our Texas Agricultural Experiment Station) says that a research project is not completed until the public has been informed of the major findings. I would go along with him. But I would say that we have a responsibility beyond that, whether we like it or not, to carry this project right on through until it is used somewhere in education for the benefit of somebody; whomever it is designed for. I believe that if it is finished and put on the shelf, you might just as well not have done it in the first place.

So we are following through and I developed in accordance with one of our objectives, that we ought to inform young men of opportunities within these occupational areas. We found that there just wasn't anything available. We found a lot about the professions, but what about the mechanic? What is the mechanic trade like, and so I have developed a little 8 page thing that I hope will be placed in the hands of young men who are considering mechanic trade as a possible occupational area; and I tried to be real honest with them, in setting forth the number of hours they would be expected to work, the fringe benefits, etc.

THE CENTER FOR RESEARCH AND LEADERSHIP DEVELOPMENT

VOCATIONAL AND TECHNICAL EDUCATION

Roy Butler, Clearinghouse Staff

ERIC, as many of you know, is an acronym for Educational Resources Information Centers. ERIC was established within the U.S. Office of Education after the need for a system of storing and retrieving information was long recognized by the educational profession. ERIC is a national system with a network of decentralized clearinghouses, established for the purpose of acquiring, storing, retrieving and disseminating information in the field of education and its supporting substantive areas. At the present time, there are 19 clearinghouses that comprise the ERIC system. They all report to central and there is a feed-back between the clearinghouses.

The ERIC Clearinghouse on Vocational and Technical Education is a component of The Center for Vocational and Technical Education which is located at Ohio State University. The Center is funded by the U.S. Bureau of Research, Division of Comprehensive and Vocational Education Research, and maintains laison with the Division of Vocational Technical Education in the U.S. Office. The Center contract is between the U.S. Office of Education and The Ohio State University Board of Trustees. The director of The Center is Dr. Robert Taylor and he responds directly to the provost and vice president for academic affairs. He also relates himself to the appropriate OSU Deans and the national advisory committee. The Senior specialist staff fold joint appointments in appropriate University Academic Departments. Internally, the center is organized under the director with a sustaining staff, a coordinator for research development training, information services, and leadership development. The Center's professional staff is composed of an interesting mesh of vocational educators, educators, behavioral scientists, and information specialists.

In an effort to fulfill one of the main objectives, the clearinghouses acquire in the ERIC network, index, abstract, and submit materials to central ERIC. Each clearinghouse acquires documents which are within its scope and sends them to central ERIC for computerized processing. The original document in turn is forwarded to the ERIC Document Reproduction Service. The resulting publication from the submission of all of the clearinghouses is Research in Education which is printed monthly and distributed by the Government Printing Office. Research in Education or RIE as it is commonly referred to has a very good set-up for use. Within RIE the indexes and the cross-reference of clearinghouse numbers and E.D. numbers allow one to find abstracts of relevant interest. Current ordering instructions for microfiche and hard copy from ERIC Document Reproduction Service is in the latest issue of RIE. Some of the materials which are not announced in Research in Education, as well as some that are announced, are included in one of two quarterly publications that are available from The ERIC Clearinghouse on Vocational and Technical Education. One of the publications is known as ARM, specifically Abstracts of Research and Related Materials in Vocational and Technical Education, and the other publication AIM, Abstracts of Instructional Materials in Vocational and Technical Education. The documents that are not announced in RIE are not available as individual microfiche under a separate E.D. number. The group of document abstracts in AIM and ARM are assigned an E.D. number and they are available in a set of microfiche which backs up each quarterly issue of AIM and ARM. The AIM and ARM microfiche sets are filmed in continuous V.T. number sequence for a continuous set. Each set is announced under an individual E.D. number and appear in RIE. The E.D. number for the VT-ERIC set is also announced in a later issue of AIM and ARM.

Another activity of ERIC has been the sponsorship of review and synthesis of research series in specific service fields and problem areas. This activity is continuing. Other clearinghouses produce and distribute similar type materials that may be useful to you. A relatively new publication from the ERIC system is the Current Index to Journals in Education (CIJE). It is designed to help with the task of monitoring journal articles which are pertinent to particular areas of educational interest. Over 200 Journals are catalogued and indexed on a selected basis. These Journals were selected as a result of a survey of user population by the U.S. Office of Education. Articles within Journals are indexed with terms from the thesaurus of ERIC descriptions, which in a way makes it a companion publication with Research in Education, (RIE). CIJE does not contain abstracts but this computer generated publication does contain a main interest section, an author index, a subject index, and an index to source or journal articles. CIJE is accumulated annually and semiannually. I have information for you along with me on CIJE that cites the 200 Journals that are indexed and also information on ordering. Thus, I would say that the user might meet his own needs by searching AIM, ARM, RIE, CIJE, other information products from central ERIC, The ERIC Clearinghouse on Vocational and Technical Education, and other information products from other clearinghouses.

In the future the eventuality of direct interface with the central collection may be possible by means of remote terminals to an electronic computer. Currently, the multi-level nature of the ERIC system precludes a direct access to the collections of the clearinghouses and central ERIC because of financial resources.

As the clearinghouses and ERIC system in general move ahead on several fronts, it follows that the users must also move ahead in their capacity to use new products and services. It is also important, I believe, to emphasize that the ERIC system is as useful to a given educational field as are the inputs and sharing of materials within the system. Making inputs into the ERIC system may take more than one route. If the material is a report of a U.S. Office of Education funded project it should be submitted to the USOE project officer for processing clearance, he will then send copies to central ERIC where it will be assigned to the appropriate clearinghouse for abstracting, indexing and entrance into the ERIC system Other materials may be submitted directly to the acquisition specialists at the ERIC Clearinghouse on Vocational and Technical Education.

The total network requires a great deal of communication and cooperation among many people to produce a product which will help us provide the best vocational education setting that we can for our students.

Reports are received from federal agencies (for example, the Office of Education, the Department of Labor, Office of Economic Opportunity), from vocational education centers, educational institutions, professional associations, Research Coordinating Units, foundations, and also individuals forward material on their own.

In summary I would say that it takes a lot of cooperation and much interest and study in the use of the ERIC system. I'm real pleased that I could share some of these developments with you and I urge you to remember that the information sharing publications (AIM, ARM, and RIE) are dependent on the contribution of materials from the profession.

THE CONSTRUCTION OF STANDARDIZED ACHIEVEMENT TESTS FOR OFF-FARM AGRICULTURAL OCCIPATIONS

J. Alex Hash, Assistant Professor
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In 1965, the agricultural educators of South Carolina planned and initiated some pilot programs in off-farm agricultural occupations. These pilot programs were in the four areas of: ornamental horticulture, agricultural mechanics, agricultural sales and services, and forestry. The major purpose of these pilot programs was to learn how to conduct effective instructional programs in agricultural occupations other than farming. Therefore, pilot programs were conducted in twenty-three carefully selected high schools, and enrollment per program was limited to a maximum of fifteen students. The training programs were designed for job entry, and supervised work experience of 150 hours was stipulated.

Statement of the Problem

The fundamental problem of this research was: The construction of a multiple-choice, standardized achievement test in forestry education for the secondary school.

Objectives of the Study

The specific objectives of this research were:

1. To construct 200 multiple-choice test items covering the essential principles, concepts, skills, and competencies of forestry education at the secondary school level.
2. To select 100 of these test items for the final form on the bases of item analysis statistics, cross-validation, and content validity considerations.
3. To develop tentative state norms for each grade in high school vocational agriculture in the form of percentiles and T-scores for comparing pupil achievement.

Value and Empirical Assumptions

The following value assumptions were made prior to undertaking the study:

1. There is a need for more standardized achievement tests to augment present and future evaluative procedures in agricultural education.
2. Standardized achievement tests will contribute to more valid and scientific evaluations in agricultural education.
3. The norms developed from a test constructed without teaching specifically for the test can be generalized and applied to bordering states with forestry programs similar to South Carolina.

In addition, two empirical assumptions were made before conducting the study. They were:

1. A standardized achievement test with acceptable reliability coefficients and standard errors of measurement can be constructed without teaching specifically for the test.
2. Standardized achievement tests can be used to facilitate research regarding the effectiveness of different teaching methods.

Major Procedures

This section describes the general design and relates some of the procedural details followed in conducting the study. It includes selecting the sample, preparing subject matter outline, stating objectives, consulting forestry subject matter and educational measurement specialists, and developing a table of specifications.

Selecting the Sample. The criteria established for selecting schools for trial administration of the preliminary forestry test form were as follows:

1. Teacher had at least three years teaching experience.
2. Teacher had a good attitude towards forestry.
3. Teacher had provided a minimum of ten instructional hours and had forestry references available.
4. Chapter forestry awards had been won by this school during the past six years.
5. Chapter had a school forestry plot.
6. A relatively large number of students studied forestry during the year.
7. School was located in a county with a large forestry acreage.
8. Several forestry industries were located in county or near the school if across county lines.
9. Teacher was qualified to teach forestry by virtue of having: (a) taken college courses in forestry, (b) had in-service education or (c) done independent study and possessed a strong interest in the subject.
10. School was conducting a pilot program for training forestry aides.

Using these criteria twenty-nine schools were selected for trial administration of the preliminary test form.. This number included twelve schools conducting pilot programs for training forestry aides. There was a combined student enrollment of 500 students representing grades 9-12 in these twenty-nine schools.

Determining Major Content Areas and Behavioral Objectives. After studying course outlines in South Carolina, Georgia, Tennessee, and Virginia, and forestry textbooks and materials, a tentative outline of eight major content areas was developed and submitted to four subject matter specialists included one teacher educator in agricultural education, two extension foresters, and one information and education specialist with the State Commission of Forestry. All four specialists had worked closely with vocational agriculture teachers in forestry workshops and preparation of materials. These specialists were requested to indicate the percentage of questions on the final test that should come from each of the content areas.

Following formulation of the major content areas, the investigator proceeded to write instructional objectives stated in behavioral (performance) terms. This refers to specifying the intended outcomes of a study of forestry and the terminal behavior the learner should be able to exhibit, after receiving instruction and participating in learning experiences.

The task of stating instructional objectives was undertaken and accomplished by using the procedure and format suggested by Mager. These objectives, one for each major content area, ensue:

1. Given situations concerning the importance of forests, the examinee must be able
    a. to recognize economic and recreational values in terms of income and employment for the United States, Southeast, and South Carolina.
    b. to indicate conservational values from the standpoints of wildlife protection and erosion control.
2. When multiple-choice questions regarding tree growth are posed, the examinee must be able to indicate the functions of various parts of a tree and to perceive basic concepts of plant development.
3. Given multiple-choice questions concerning tree identification, the examinee must be able
    a. to recognize leaf sketches of common species in South Carolina.
    b. to classify species as hardwoods or softwoods.
    c. to recognize the habitat, products, and characteristics of various species and woods.
4. When situations dealing with reforestation are posed, the examinee must be able
    a. to identify accepted reproduction methods, spacings, principles, and procedures for establishing a stand.
    b. to select approved practices from a list of alternatives.
5. Given situations demanding managerial decisions, the examinee must be able to select approved practices for thinning, controlling weed trees, and harvesting timber products.
6. Given questions describing measuring and marketing forest products, the examinee must be able
    a. to recognize basic definitions of key terms.
    b. to identify the function of different measuring instruments.
    c. to solve problems of log scaling, valume board feet and cubic foot volume of standing timber with the aid of appropriate scales and/or tables.
    d. to distinguish between efficient and inefficient alternative marketing procedures.

7. Given situations describing injury to the forest, the examinee must be able

- a. to select appropriate procedures for preventing and controlling fires.
- b. to identify the nature and amount of damage caused by insects, diseases, and livestock on various species.
- c. to indicate recommended practices and treatments for controlling these three pests.

8. Given questions concerning safety in managing a forestry enterprise, the examinee must be able to identify major causes of accidents, select first aid measures, and solve problems of accident rates.

THE INFLUENCE OF SELECTED FAMILY AND SCHOOL RELATED FACTORS ON THE EDUCATIONAL AND OCCUPATIONAL LEVELS OF HIGH SCHOOL BOYS AND GIRLS

by

Charlie M. Curtis, Professor
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A statewide research project was launched by the School of Vocational Education, Louisiana State University during the Spring of 1968, to identify educational and occupational aspirations and expectations of secondary school students in Louisiana. It was also concerned with the determination of the influence of certain factors on the vocational and educational objectives of these students.

1. Do boys and girls develop definite occupational objectives while in high school?
2. At what grade level do they make career choices?
3. What are their educational plans?
4. Who influenced them in making their educational and occupational plans?
5. Are high schools providing the guidance services needed to assist students in making decisions concerning educational and occupational objectives?
6. Do boys and girls feel that they are receiving the training that will enable them to determine occupational and educational objectives?
7. Are boys and girls knowledgeable concerning the work world?
8. What factors, family and school related, directly affect the formulation of aspirations and expectations concerning education and occupations?

To provide a framework on which to build the study, certain assumptions were made. It was assumed that various factors associated with the school affect the occupational and educational desires and expectations of young people. As an example, it is generally accepted that status position of the family from which the student comes will affect his occupational and educational goals. Generally, students from higher status families do not have the monetary problems which stifle vaulting ambition nor are they as limited in occupational vision as the student from the lesser status family.

It was also assumed that the occupational desires of the sexes differ as a result of socialization. Today, in our society, it is the male who is perceived as the source of income for the family while the female role is more typically visualized as keeping the home, rearing the children and at times helping with the family income.

It was further assumed that desired and expected occupational and educational aspirations of students from the higher status families would be more nearly in harmony than would those of students from lower status families. One very obvious reason might be that the student from the upper status family will not so frequently interpret as an insurmountable hurdle, the necessity of financing an education which will allow him to obtain a high level occupation and therefore will not find it necessary to lower his expectations.

Assumptions were also made that certain school related factors were associated with occupational and educational decisions of youth. Generally, we have proceeded, in public education, on the premise that students with high academic achievements, above average leader-qualities and participation in extra-curricular activities usually aspired higher educationally and occupationally and that there would be less difference in these aspirations. Certain research has tended to indicate that this is not necessarily true that certain factors involving the availability of occupational information and counseling services, the availability of a wide variety of courses to stimulate interest and develop ability, as well as the encouragement of the school administration and teachers exert a considerable influence on the educational and occupational decisions of youth. Using other research as a beginning point it was assumed that a large percentage of the students in Louisiana high schools would indicate that the school could do a better job of educational and occupational orientation.

This study was descriptive and utilized the Survey Method with the group interview technique to obtain needed information. Data were collected by the use of a multiple choice inventory form designed to determine the educational and occupational aspirations and expectations of secondary school students in Louisiana. The inventory was administered by experienced survey teams in a one hour period per group in each of the public secondary schools participating in the sample. The survey director corresponded with each parish superintendent in the state concerning their schools participating in the study. Affirmative replies were received from twenty parish school systems. The Louisiana State University Research Team and the parish superintendents arranged the survey schedule. Schools were selected, which in the judgement of the administration, were representative of the urban, semi-urban, and rural areas. Visits by the survey team were arranged at the convenience of each school system for the purpose of collecting data. Samples for each school ranged from twenty per cent to 100 per cent of the total student body. Final sample consisted of 6,200 girls and 5,810 boys.

Data were organized and presented in six parts: General information, Self-related factors, Family-related factors and School-related factors; also Educational and occupational aspirations and expectations.

Statistical procedures involved were frequency and percentage distributions, frequency count by assigned cell blocks, chi-square test of significance, and contingency coefficient

The sample included nineteen parishes and a total of sixty-four high schools.

Findings indicated that students were fairly evenly divided between a college preparatory and a general curriculum, an average of around forty per cent each for boys and girls--vocational curriculums claimed only approximately twenty per cent of each.

Self-related Factors

1. Ninety three per cent of the students indicated that they lived with both parents, a parent and a step-parent or one parent only.

2. Data indicated that the majority of the students do not work while in high school.

3. The majority of the students associated with friends that are presently in high school (92.7 per cent).

Family-related Factors

One of the objectives of this study was to determine the family factors that influence the educational and occupational aspirations of high school students in Louisiana. Another function was to determine to what extent high school students have firmed up their expected educational and vocational plans.

1. Fifty-two per cent of the students indicated that their mother is a full-time homemaker.

2. Father's annual income ranged from under $3,000.00 (17.2 per cent) to over $9,000.00 (16.4 per cent). Thirty-two per cent indicated incomes that ranged from $3,000.00 to $7,000.00. It was significant that annual income was fairly well distributed over the scale with responses gradually decreasing as the upper limits were reached.

3. Mother's income fell primarily in the under $3,000.00 and less than $5,000.00 ranges. Many no replies were recorded because mothers were not employed.

4. The number of children per family ranged from one to more than nine. The average family was composed of four or five children.

5. The majority of the students indicated that family status in the community as being that of just average people (73.5 per cent).

6. Responses to the question concerning father's education were in the following manner:

Less than high school	50.9 per cent
Completed high school	23.9 per cent
Vocational School, business school or some college	11.4 per cent
College degree	6.4 per cent

7. Mother's education was as listed below:

Less than high school	45.1 per cent
Completed high school	34.1 per cent
Vocational school, business school or some college	10.8 per cent
College degree	5.0 per cent

8. The majority of the parents were very encouraging concerning their children continuing education beyond the high school level.

9. Data reveal that in the main families considered the fathers and mothers occupations to be satisfactory or good.

School-Related Factors

1. In the majority of cases high school achievement was listed in the "C" and "B" range.

2. Seventy-six per cent of the participants listed their leadership ability as average or above.

3. Data show that secondary school teachers are encouraging students to continue their education.

4. Availability of occupational information received responses ranging from fair to excellent with good receiving the most responses. Availability of counseling service received responses in the same manner.

5. A very broad participation in extra curricular activities was indicated. Fifteen per cent indicated no participation.

6. English, math, H & PE and science were listed as subjects that exerted the most influence on educational and occupational choices.

7. Mothers were at the top of the list of persons influencing educational choices with fathers following very closely. The guidance counselor, principal and academic teacher were the school personnel most frequently listed.

8. Concerning persons influencing occupational choices the mothers were found to be at the top of the list with fathers ranking second. School personnel received a disappointing number of replies in the category.

9. A negative reply was received in the majority of the cases when students responded to the item concerning discussion of future occupational plans with teachers or guidance counselor.

Occupational

1. Response to the item concerning freedom to choose their desired occupation produced a list of 181 different occupations. It was interesting to note that the majority of the occupations listed would rank from medium to high on a prestige scale. Occupations noted as outstanding for boys were engineering, medicine and teaching in professional categories. In the technician and skilled areas television repair, mechanic and welding were listed most frequently. The girls listed teaching, nursing and secretary most frequently. A high percentage of the students indicated no choice.

2. Response to the item requesting a statement of the occupation they would probably enter produced a list of about 160 different occupations. A comparison of the desired occupation and that which they expected to enter indicated that in the main about 55 per cent of the students expect to obtain their desired occupational goal. A disturbing note was indicated when 30 per cent responded that they had not made a choice of their expected occupationa.

3. According to replies recorded 50.2 per cent of the secondary school students made their occupational choice before they entered the tenth grade. Fifteen per cent indicated that occupational choices were made while in the twelfth grade.

4. Education needed to enter choosen occupation was listed as college degrees by 32.8 per cent, vocational school or some college by 31.4 per cent and high school completion by 21.3 per cent.

5. Probable reasons given for not entering desired occupations are as follows:

a.	change of interest	41.1 per cent
b.	lack of finances	17.0 per cent
c.	marriage	14.9 per cent
d.	physical handicap	12.5 per cent

Educational

Data indicate that this majority of the students interviewed aspire fairly high in terms of desired and expected educational goals. Most students felt that some education beyond high school was necessary.

It was indicated that continued education would be financed by parents, scholarships and part-time work.

Implications. The findings of this study add emphasis to the need for a long look at broadening the secondary school program. The guidance and counseling service at the secondary school level should be extended so that up-to-date occupational information may be provided students beginning in the earlier grades. A beginning course dealing with job opportunities in all occupational areas might be used effectively for this purpose.

Data suggests the addition to the high school curriculum of a broad vocational education offering. Also suggested is the need for a better coordination of teaching, guidance and counseling.

The need for a continuing research program in the occupational areas is emphasized. Training in occupational areas should be coordinated with employment opportunities.

WORKING WITH LOCAL SYSTEMS IN IMPLEMENTING RESEARCH

William C. Boykin, Sr., Alcorn A & M

There is a broad tendency among educators to view with suspicion the practical application of research in education. This attitude is probably born of a tenacious adherence to tradition -- the discomforts of wresting oneself away from the tried and true. This attitude is understandable. This country, including its educational system, was carved out of and built upon many errors as it attained its present position of leadership. Among educators, there is a feeling that research should be trusted to only the highly trained specialists. This is a tragic and common misconception. It is not true, though, that all educators can participate actively in research. All educators do not have the temperament or training needed for this venture. All educators, nevertheless, must be informed and can participate in putting into practice much of the knowledge developed through research. Moreover, all educators must become involved in this aspect of the educational program if we are to progress at more than a snail's pace.

There was a time in this country when the problems arising in education would adjust themselves in due course of time. The social system and the economy changed slowly. Maladjustments of the educational system with social and economic conditions passed unnoticed. If the education provided youth was out of tune with that demanded by the world outside the educational establishment, it did not really matter. Education then was considered a luxury to be enjoyed rather than to be used. But, with the advent of vocational education, education became a vital force. In the dynamics of education for work, the clamor is for relevancy in education. It is for relevancy to the work which people do, for relevancy to the aspirations of people, for relevancy to the social lives led by people, and relevancy to emerging economic conditions. Research occupies a crucial position as we as educators attempt to cope with these mounting challenges through individual and group efforts. Meeting these challenges often demands change. Educational change, to meet the criterion of validity, must be a logical outcome of systematic, controlled, empirical, and critical investigation -- a product of research.

Permit me the liberty to propose the premise here that if fruitful and enduring improvements in the educational system are to take place, they must be affected with the total involvement of the school and community personnel. Both basic research and implementation of research must stem from within. Both the change agent and the change clientele must be a part of the system to be changed. It is further proposed that neither research nor implementation will be very fruitful or useful until the personnel of local systems become imbued with and committed to research thinking. When they are in position to think critically about the efficacy of long-standing customs, practices, and programs in terms of immediate and long-range benefits to society, they will be better equipped to think and work in a spirit of scientific inquiry. To develop this attitude on the part of school administrators, teachers and other personnel of local systems, presents a tremendous challenge to us as teacher educators. These dispositions must be developed among the teachers whom we prepare during both undergraduate and graduate work. They must receive a considerable orientation toward research, must be equipped with some of the tools and must gain some of the experiences needed here, if they are expected to participate in the implementation of research as professional educators in local school systems. They must be led to understand, and to have a healthy respect for, the scientific method of inquiry if we expect them to have the critical scientific inquiry. It is my opinion, and I believe that you share this opinion, that this is a first crucial step toward implementation of research by local systems. Let me hasten to add that I believe that some of our more sophisticated institutions are doing an excellent job at this task. To the extent, then, that this foundation for implementation has been built, we are prepared to move rather boldly into a consideration of some of the areas in need of further research and give rather close attention to the implementation phase in local system.

In this context, we recognize four mutually discreet facets of the change process which we hope to bring about: (1) Initiation, (2) Research, (3) Implementation, and (4) Diffusion. By initiation, we have reference to the fact that somebody must perceive the idea that something is wrong with the educational system. Ideally, this discovery should come from within the system. Quite often it does not. Malfunctioning of a local school system is often discerned by knowledgeable persons outside the system. Research is the phase which helps determine what is wrong and thus points the way toward corrective measures. It is hoped that the expertise passed collectively within sub-system, coupled with the disposition toward objectivity, will permit scientific inquiry. Implementation is the process of placing in motion the findings of research. While initiation and research might well come from without the local school system, effective implementation must be carried on by the system, probably with the guidance of external help. Implementation is only a step toward diffusion -- an acceptance of the results of research and implementation in an entire system. In this process of diffusion, we can recognize four acceptance levels of change: (1) Conservative, (2) Progressive, (3) Modernistic, and (4) Futuristic. Considering the traditional lay of practice behind theory, we should probably be happy to get the rank and file of school systems to operate at the progressive level. A few might be on the cutting edge -- the modernistic level. The futuristic sub-systems of the system will be few. They are pacesetters, the ones which initiate, research, and first implement ideas to be emulated (diffusion) by other sub-systems of the system.

Having given some consideration to a conceptual framework of implementation in general, let us turn specifically to look into the Initiation-Research-Implementation-Diffusion process in agricultural education. This process ends in Diffusion for the specific reason that generalization is a desirable end product of research.

The Smith-Hughes Act of 1917 set the stage for agricultural education for nearly 50 years. We believed in those early years that the Farm and Home Management Survey served as a most reliable basis for the agricultural education program in a locality. We still do, if we hasten to add that it is a most reliable basis for teaching and reteaching those who are engaging in production agriculture. There are many of us who have conducted rather systematic surveys of this type. So far as I am concerned, this was research. Upon these findings, agricultural education programs were projected and implemented. There is a dire need for researchers to work with local systems in planning systematic research of this type. Most importantly, there is a need to work with these systems in the proper interpretation of the results and in applying them in the development of educational programs.

Since 1917, the concept of agriculture has been considerably expanded. It now embraces a vast complex of interrelated occupations, knowledge, and skills related to the production, processing, and distribution of agricultural products. During the past ten years, considerable research has been done in the area of off-farm agricultural occupations. This research has been disseminated from most of the major universities in this region. Dr. Mondart and his associates at LSU are notable in this area. I am afraid that I can't say as much for the implementation process. Certainly, research in this vital area of agriculture needs to be continued. I am sure, though, that we need to bend some of our efforts toward developing more exemplary programs in agricultural education based on some of the research findings. In fact, we need to see more shining examples of comprehensive programs in vocational agricultural education -- programs which cut across the entire spectrum of the industry, from Junior high school through post-secondary and with people of all ages and stations in life.

Probably nowhere in local school systems do weaknesses show more clearly than in the area of vocational guidance and career development. For years, the war has raged over directive and non-directive counseling. The directive counselor would sort out students like potatoes -- some to be farmers, others lawyers, others doctors, etc. The non-directive counselor would more or less leave a student on his own to decide. I doubt that either of us would be found on either of the extremes in our orientation toward this process of career selection.

Between 1887 and this date, our science of educational measurement has developed and has become rather sophisticated. We now say that a human characteristic is something which exists and it can therefore be measured. We can state the statistical confidence which we can place in various measures of aptitude, interests and aspirations.

With the vast amount of research information available, there is a dire need to work with local systems in developing novel and exemplary programs in counseling and guidance toward occupational selection and preparation. Such programs need the constant guidance of persons who understand the process and the implications of research in the area. More likely than not, an educational program would have to be conducted among personnel of the local system before such programs are instituted. Without doubt, such programs would be more fruitful of enduring results if they were conducted in conjunction with exemplary comprehensive programs in vocational education.

Certain methods and procedures have become characteristic of instruction in vocational agriculture. We refer to the project, supervised study, laboratory work, etc. Do we dare ask ourselves some probing, and uncomfortable questions concerning the efficacy of these devices? Do we dare test in the crucible of controlled experimentation, in actual school situations, some of our sacred theories of methodology? Psychological research has yielded an enormous amount of information relative to the learning process, efficiency in affecting learning at its many different levels, and evaluation. Much of this research information silently collects dust in research bulletins. Probably we, as change agents, have the responsibility to synthesize such data and work with local systems in starting the diffusion process. Such ventures could help us solve a myriad of problems of the educative process. Some examples are as follows:

We are caught in the throes of teaching the disadvantaged in our midst. We know that in many ways teaching students of low mental ability differs from that of teaching brighter children. There is a need to apply the psychology of teaching the mentally retarded students in our schools.

In the sense that the differences in principles have been discovered and tested under controlled condition, this of course, is research. In the sense that these principles are being tried under "field" conditions, it is implementation.

We know that a semantic gap exists between teachers and students who suffer under the handicaps of socioeconomic depression. Some research has taught us this fact, and pointed the way toward more effective communication. We are in need of a crash program of implementation of these findings and recommendations in local systems.

Research suggests to us that the agricultural education needs of people have changed. In far too many systems, vocational agriculture teachers still project traditional and unimaginative programs based primarily on the premise of 1940 agriculture. This lag of practice behind research is probably attributable to the fact that much of the research on modern program needs in vocational agriculture has never been read by local school personnel. It should be dusted off, explained, and interpreted with a view of modernizing the offerings. This is a process which requires careful guidance and systematic planning and follow-up by competent persons working with local school systems.

So far, we have talked about this subject as if implementing research is a straightforward, simple matter of having our wills obeyed. There can be little doubt about our convictions, in most cases, about the worthwhileness of the research which we wish to have implemented by local systems. We are convinced of its value in the improvement of education. For example, few educators in agriculture doubt the practical need and value of off-farm agricultural occupations in the school curriculum. The concept of the area vocational school, we feel, resulted from a long-felt need for greater diversification in educational offerings. The concept that agricultural education is broader than farming will hardly be denied by even the most conservative and stereotyped agricultural educator. Research has produced some rather convincing evidence that a vast array of jobs performed off the farm require knowledge and skills acquired through agricultural training. Experiment station literature abounds with research in crop varieties, fertilization, and cultivation practices; herbicides and pesticides; machinery and equipment. These discoveries are sufficient, if implemented, to revolutionize farming and the arrangements for agriculture in our schools. On these, there is no doubt of conviction on our part. Our conviction is a necessary ingredient for implimentation. It is by no means sufficient.

Characteristically, we have been long on conviction and have been short on our knowledge of the change process. We have been rather well prepared on the criterion of technical knowledge but rather less well prepared to perform our true role as change agents.

We shall have need in the future to take into account the emerging structure of the power system in our localities. In the past, this structure was centered in agrarian society. We had only to work with "key" farmers as a starter in legitimatizing changes which we wished to take place. In all probability in those days the school superintendent and school board members were themselves farmers or ranchers. Now, not only are progressive farmers not necessarily the holders of powers, it quite often is the case that superintendents and board members do not have an orientation to agriculture. Therefore, it becomes exceedingly important that we as initiators of change through research, develop effective means of analyzing the situations in which we work to really understand the initiation--implementation--diffusion process. This, in itself, is an essential first step which we should take in our attempts to work with local systems. In other words, we need to develop a healthy concern for identifying community legitimatizers and how they operate in either facilitating or inhibiting us from reaching the clientele for which research results are intended. So let us, first of all, make doubly sure that innovations revealed by research which we wish to implement is worthy of diffusion. Then let us with all the expertise and zeal at our command work with local systems toward the attainment of what hopefully is our common goal, the improvement of education at the local level.

ARKANSAS VOCATIONAL EDUCATION EVALUATION PROJECT

Robert E. Norton, University of Arkansas

Believing that well-designed evaluations are indispensable to sound educational decision-making (program planning and program improvement), the Department of Vocational Education, University of Arkansas, sought involvement in this project. It was felt that although some teachers have conducted evaluations of their own program, few schools have taken a close look at their total occupational program in terms of current manpower and student needs.

This project basically involved the "Try Out and Demonstration of an Evaluation System for Local Programs of Vocational Education" which had been developed in two previous Michigan projects involving thirteen schools between 1963 and 1967. The general outline and activities which were successful in the last Michigan project were adopted and followed, except for the variations necessary to meet the situation and needs of Arkansas. The primary purpose was to determine the extent to which the evaluation procedures formulated in the Michigan project were generalizable to Arkansas and the extent to which they may need changing or improving.

Objectives

To determine the feasibility of using the evaluation system developed in Michigan to help evaluate vocational and technical education programs in Arkansas.

To develop new or improved procedures for assisting schools in conducting program evaluations.

To assist in the development of leadership competencies that are needed for evaluating local programs of vocational and technical education.

To create an awareness of the importance of involving both citizens and professionals in the evaluation process.

To foster the development of positive attitudes toward both program evaluation and vocational education.

Assumptions

Four basic assumptions underlie this evaluation project:

* Program evaluation is a prerequisite to improvement of the efficiency and effectiveness of the vocational effort.

* Evaluation should be carried out by those who are likely to be affected by it and/or by those who will be responsible for implementing any changes which may result from it.

* Emphasis in program evaluation in local public schools should be primarily on goals and outcomes. Modern philosophy of evaluation gives increasing support to the goals-outcomes or product approach. The question suggested is: "How well is the school achieving the goals of preparation for the world of work?"

* Evaluations conducted in the past, in which consultant help has been used, have usually emphasized ways and means or process rather than the product. Professional educators now, however, are seeking improved methods and techniques of evaluating contributions of the school to occupational preparation. They are also convinced that provisions for evaluation need to be built into future plans for vocational education in the public schools.

Focal Points

Four specific features are unique to this project:

a. Local Objectives. These were first revised or formulated by school personnel. Emphasis is on determining the extent to which these goals are being achieved. The evaluation does not involve comparison with any predetermined criteria.

b. Local Involvement. Emphasis is on self-evaluation by local citizens and professionals concerned with the program rather than by outside experts.

c. Outcome Centered. Emphasis is on the product or output of the program as contrasted with most accreditation and state evaluations which emphasize the process or ways and means. This does not mean that process evaluation is unimportant but rather insufficient by itself.

d. Vocational Centered. Focus is on the total vocational or occupational education program of the school. All parts of the curriculum having vocational objectives were considered--at both the high school and post-high school levels.

School Selection

Five Arkansas public school systems were invited and selected to participate using the following criteria:

a. All vocational programs were to be represented in one or more schools.

b. Each school was to have three or more vocational programs offered.

c. Schools with different size student populations were sought.

d. A good geographic distribution was sought.

e. Strong commitment had to be evidenced by the administration.

f. The school had to be recommended by the project advisory committee.

Required Activities

Each school administrator signed a memorandum of agreement regarding the minimum activities to be performed in his school:

a. Appoint a working committee of the faculty, consisting of a teacher representing each of the vocational programs offered, a representative of the guidance staff, a representative of the other teachers, and a representative of the administrative staff.

b. Appoint a citizens' advisory committee for each vocational program to work with the local leader and staff committee.

c. Develop or revise a statement of the philosophy and objectives of the local program of vocational and technical education.

d. Conduct a follow-up survey of former students (unless a satisfactory follow-up has already been conducted.)

e. Prepare an assessment of the effect of the local evaluation project.

What Has Been Done

Two major objectives of the project were: first, to try out the procedures developed in Michigan, and secondly, to develop new or improved procedures useful to schools conducting program evaluations. Both of these objectives have been taken seriously by the leadership at the state and local levels.

All of the cooperating schools have completed more than the minimum activities required of them. They have sought, through additional studies and surveys, additional data which would help them evaluate and improve their local offerings.

The state project staff has strongly encouraged the use of a student vocational interest survey, participation in the RCU Student Information and Follow-Up System, the establishment of general vocational advisory committees, and the conducting of local occupational opportunities surveys.

The following table summarizes the actual activities completed or underway and the number of school participating in each activity.

ACTIVITY

	Schools Participating
Develop statement of philosophy and objectives	5
Establish staff steering committee	5
Establish occupational area committees	5
Follow-up of former students	5
Ohio-Vocational Interest Survey (3000 students)	5
Participate in RCU Student Information and Follow-Up System	5
Establish general vocational advisory committee	5
Take the Vocational Education Information Inventory	5
Conduct occupational opportunities survey	3
Conduct staff curriculum study	3
Conduct parental survey	2
Conduct staff visits to industry	1